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DIFFERENT SUCCESS RATES AND ASSOCIATED FACTORS AT THREE LEVELS OF CAREER PROGRESSION AMONG US MARINE CORPS OFFICERS

by

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September 1993

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Increasing retention of quality minority officers is a high priority of the Marine Corps. Determination of any differences in survivorship among racial and ethnic groups and any factors associated with those differences is a first step. This study analyzed the performance of Marine Corps officers at different career stages to determine what variables were associated with success or failure incrementally at successive career steps or continuously throughout a career. Factors that significantly impacted performance at all steps through selection to major were COMMISSIONING SOURCE, GCT SCORE, and COMPOSITE THIRD STANDING at The Basic School. Additionally, samples of the Marine officer population, matched according to level of significant factors, were used to determine if success was dependent on race. At the career stages of The Basic School, selection to captain, and selection to major, success was independent of race.

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DIFFERENT SUCCESS RATES AND ASSOCIATED FACTORS AT THREE LEVELS OF CAREER PROGRESSION AMONG US MARINE CORPS OFFICERS

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ABSTRACT

Increasing retention of quality minority officers is a high priority of the Marine Corps. Determination of any differences in survivorship among racial and ethnic groups and any factors associated with those differences is a first step. This study analyzed the performance of Marine Corps officers at different career stages to determine what variables were associated with success or failure incrementally at successive career steps or continuously throughout a career. Factors that significantly impacted performance at all steps through selection to major were COMMISSIONING SOURCE, GCT SCORE, and COMPOSITE THIRD STANDING at The Basic School. Additionally, samples of the Marine officer population, matched according to level of the significant factors, were used to determine if success was dependent on race. At the career stages of The Basic School, selection to captain, and selection to major, success was independent of race.

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Headquarters, Marine Corps (HQMC) initiated a comprehensive study of officer performance in preparation for a Summer 1992 Task Force Review of the Marine Corps Affirmative Action Plan. The Manpower Analysis, Evaluation and Coordination Branch ((MA) conducted the analysis at the request of the Equal Opportunity Branch. For similar purposes, the Manpower Policy, Planning, Programming and Budgeting Branch requested MA assistance in compiling a review of officer accession data to develop an accurate profile of a successful officer. A perception that the proportion of minority officers, especially Blacks, was too small was pinpointed for additional scrutiny.

B. PROBLEM

The problem was to determine if minority officers were at greater risk of attrition or less satisfactory performance in training and failure of selection than officers in the general population.

C. OBJECTIVES

Accordingly, this study had three objectives. First, to establish a database of sufficient proportions to track Marine Corps officer career success from accession to the grade of O-4. Second, to profile the successful Marine officer; that is, to determine what variables are associated with success or failure incrementally at successive career steps or continuously throughout a career from commissioning to promotion to Field Grade. Third, to determine if race alone is linked to differences in performance at each career step.

D. SUMMARY OF ANALYSIS

This study analyzed data on the 17,870 Marine officers who attended The Basic School (TBS) during calendar years 1980 to 1991. This data was partitioned into 12 cohorts corresponding to year of attendance at TBS.

A cohort analysis sought to determine demographic and historical differences between the 12 cohorts at three career milestones: TBS, selection to captain, and selection to major. Additionally, since data on the pre-accession population was unavailable, data on the U.S. college population was used to extrapolate characteristics of the Marine officer population at that stage.

A selection rate analysis sought to identify factors associated with success. For the purposes of this analysis,

success was measured by assignment to Composite Third at TBS, selection to captain, and selection to major. Factors associated with low probability of success were identified as risk factors.

A risk factor analysis sought to determine associations between risk factors and race. Risk factors having the greatest impact on minority selection rates were identified.

A matched sample analysis sought to examine success at one particular career point, selection to captain, by focusing on those risk factors in which Blacks were over-represented. Selection rates between racially distinct samples of the population, that were otherwise carefully matched on these risk factors, were compared.

E. SUMMARY OF FINDINGS

This wide ranging analysis yielded four major findings:

- A force structure instability in terms of key demographic and Manpower, Personnel, and Training (MPT) factors was found in the Marine officer corps.
- Assignment to Composite Third at TBS and selection rates to captain differed significantly by race, among other factors. Notably, selection rates to major did not differ significantly by race.
- Differing racial representation in risk factors related to differences in selection rates was found.
- Race was not a salient factor in determining selection rates among samples that were otherwise matched on other significant factors.

I. INTRODUCTION

Headquarters, Marine Corps (HQMC) initiated a comprehensive study of officer performance in preparation for a Summer 1992 Task Force Review of the Marine Corps Affirmative Action Plan. The Manpower Analysis, Evaluation and Coordination Branch (MA) conducted the analysis at the request of the Equal Opportunity Branch. For similar purposes, the Manpower Policy, Planning, Programming and Budgeting Branch requested MA assistance in compiling a review of officer accession data to develop an accurate profile of a successful officer. A perception that the proportion of minority officers, especially Blacks, was too small was pinpointed for additional scrutiny. In the words of General Carl E. Mundy, Commandant of the Marine Corps, "We still have a lot of work to do in order to achieve an adequate balance of capable, competitive, promotable minorities throughout our grades and occupational fields." (Mundy, 1992).

Recent allegations of racial bias in the officer corps have brought additional pressure on the Marine Corps to more closely examine any differences in career patterns along racial lines. These allegations have come from both inside and outside the Marine Corps and have been widely covered by the media (Fuentes, 1993; Gaskins, 1993 (a); Lancaster, 1992; McDaniel, 1993; Schmitt, 1992). The issue is a divisive one.

Some Marines feel so strongly as to condemn the entire Marine Corps. Take, for example, a remark made recently in the open press; "The Marine Corps, so illustrious in history of combat leadership, evades, avoids and retreats in combating race bias." (Gaskins, 1993 (b)). Others put the blame squarely at the top: "Our senior leadership has failed to prepare our Corps for the challenges that our ethnically diverse recruiting pool is now presenting." (Cooper, 1993). Yet, the Assistant Deputy Chief of Staff for Manpower and Reserve Affairs believes "There is no single institution more committed to removing discrimination or racism than the U.S. Marine Corps." (Palm, 1993).

The more specific issues of minority officer recruitment, retention, and promotion have also generated much public discussion in the military press. Many feel that the promotion and retention disparities suffered by minority officers are not caused by racial bias. But, rather, they are linked to difficulties associated with procuring minority officer candidates with sufficient entry level skills to enable them to successfully compete with their peers. According to one officer (Graham, 1993):

> The Marine Corps needs to redesign its entire approach towards minority officer procurement. We are not keeping pace with corporate America, and are losing the battle for recruiting highly qualified minorities to fill our officer ranks.

A former Officer Selection Officer (OSO) reported that fierce competition from the corporate world often leaves the Marine Corps with "... marginally qualified applicants..." who have difficulty completing the rigorous Officer Candidate School (OCS). The problem is, simply stated, "...we need to find more minority candidates who can make it through OCS." (Strotman, 1993).

A high quality officer corps implies one that is diverse in composition, including race. The Office of the Commandant considers determining the presence of any differences in survivorship along racial and ethnic lines and identifying any factors associated with those differences a high priority. Policies concerning promotion, recruiting, performance evaluation, professional military education, and affirmative action may be affected. Just as important, if not more so, is the impact on the "esprit de corps," so vital to the Marine Corps' strength. Any perceptions of racial bias must be laid to rest. Racism, real or imagined, intentional or otherwise, "...is slowly and systematically destroying the morale of every common Marine." (Gaskins, 1993 (b)).

At least four manpower, personnel, and training (MPT) factors are typically discussed when addressing minority representation in the officer corps. They are accession, retention, promotion, and professional development. A discussion of these central MPT dimensions follows.

A. ACCESSIONS

A recent DoD study reviewed these issues using data extracted from the October 1992 Population Representation in the Military Services Report (Hodge, undated[1]). This study highlighted the fact that relatively small numbers of college age Blacks actually graduate from college and is a major factor which affects the eligible population, and thus, Black officer accessions.

North (1993) focused on performance during the early stages of a Marine Corps officer's career. Using data from the Automated Recruit Management System, precommisioning attrition and attrition from OCS were evaluated. Several factors, including age, race, physical fitness, results of standardized educational tests, college background, commissioning program, and prior service experience, were statistically related to precommisioning and OCS attrition rates.[2]

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[1]This reference is an undated, unsigned memorandum for the Assistant Secretary of Defense (Force Management and Personnel) from the acting Director for Equal Opportunity of the same office. The memorandum, which is entitled "Black Officer Recruitment," presents numerous tables and reviews and discusses salient issues concerning recruitment, retention, promotion, and professional development of Black officers throughout the Department of Defense (DoD). It recommends that DoD establish an objective "...for what the officer corps should resemble and charge the Services with developing a strategy to meet that objective." The memorandum was distributed in late 1992.

[2]The nature and strength of the relationships between these predictor variables and outcome measures varied as a function of stage of training. It is beyond the scope of the present paper to comprehensively discuss all these relationships. As an example,

B. RETENTION

Three factors have been associated with Black officer retention rates (Hodge, undated):

- The extent to which Black officers tend to "self select" or voluntarily separate from the service.
- The relatively small proportion of Black officers in combat arms, which is a major hindrance to advancement and retention.
- The relatively large proportion of Black officers who separate, voluntarily or not, before promotion to major (O-4) reduces representation in the senior ranks, and hence, negatively impacts the availability of senior role models.

Returning to voluntary departure from the service, rather than involuntary separation, survey results reveal two distinct findings that influenced Black officers. They are:

- Black officers leave military service because they are well educated, possess valuable skills, and are in demand in the civilian sector.
- A lack of Black role models in senior grades, especially in combat arms fields.

The issue of voluntary separation has been exhaustively investigated. Two of these studies completed within the past six years included Marine officers in the analysis. They focus on an individual's intention to make military service a 20

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however, of a statistical relationship that was affected by changes in the criterion variable, candidate age was associated with higher attrition rates at one stage of training, while associated with lower rates of attrition at another.

year or more career and used data from a 1985 DoD Survey of Officer and Enlisted Personnel[3].

Both studies analyzed personal and intrinsic and extrinsic job satisfaction factors[4]. Steele (1987) focused, in part, on Marine officer retention and reported that commissioning source impacted an officer's career intentions. Reserve Officer Training Corps (ROTC) commissioned officers were more likely than service academy graduates to be careerists and academy graduates were more likely than OCS commissioned officers. Notably, race did not significantly affect career intentions. However, the study reported that the impact of personal factors were relatively small compared to intrinsic factors.

Theilman (1990) focused solely on male Marine officer retention and reported that commissioning source was a significant factor affecting career intentions. This matched Steele's (1987) finding that ROTC officers tend to make a career of military service. Marital status and Military Occupational Specialty (MOS) were also related to career

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[3]This survey was conducted by the Defense Manpower Data Center (DMDC) for the Office of the Assistant Secretary of Defense (Force Management and Personnel) for the purpose of establishing a cross sectional database from which military personnel policy issues could be studied (Steele, 1987).

[4]Intrinsic and extrinsic factors associated with job satisfaction relate to sources of personal reward. Intrinsic factors include satisfaction with job demands, sense of accomplishment, and self pride. Extrinsic factors include pay and benefits, travel opportunities, and quality of family support provided.

intentions. Those officers who were married with children had higher retention rates. Officers in combat support MOSs had lower retention rates than those in combat arms. Again, race (White, Nonwhite) was not found to be significant.

C. PROMOTION

Inequalities in promotion rates by race and gender have been a concern of all the military services in recent years. Robinson (1992) examined these differences using data from the Military Equal Opportunity Assessment for each service for fiscal years 1990 and 1991. Significant differences in promotion rates by race and gender across the services were reported. Black males had significantly lower promotion rates than any other group examined. In particular, Black male Marine promotions to major (O-4), lieutenant colonel (O-5), and colonel (O-6) were below the average rate over the period studied. Robinson (1992) concluded that "indirect" or unintentional institutional racial bias in promotions existed in the services.

Long (1992) examined success in terms of promotion later in a career. Factors not related to performance were evaluated to isolate those variables which could be used to predict selection to the ranks of major, lieutenant colonel, and colonel. Marine Corps promotion data from 1986 - 1992 and log linear modeling were used to determine that marital status, attendance at appropriate level schools, and

attainment of a postgraduate degree significantly affected selection rates. Performance at TBS was not examined for its effect on selection rates. Significant by their lack of influence on probability of selection, however, were race, gender, and combat experience.

D. PROFESSIONAL EDUCATION

Hodge (undated) determined that the career path of Black officers, including attendance at appropriate level professional schools, impacted survivorship. Several studies have examined Marine officer performance at one particular professional school, The Basic School (TBS) (Harrington, 1992; Harrington, 1993; North, 1993). TBS is attended by all Marine officers after completing OCS and before MOS specific schooling[5].

Harrington (1992) focused on Marine officer performance at TBS and race. The analysis of performance among officers attending TBS during 1988 revealed, in part, significant differences in performance along racial and ethnic lines. The performance of Black, Hispanic, Other, and White Marines were evaluated on four historically significant outcome variables and a fifth variable which was thought to predict future performance. The first four variables, Academic Average,

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[5]The mission of TBS is to train all Marine officers in the basic skills required of a rifle platoon commander. Additionally, leadership skills and the Marine Corps' history, customs, traditions, and administrative and legal procedures are taught.

Leadership Average, Military Skills Average, and Composite Average, are traditional measures of performance at TBS.[6] The fifth variable, also collected at TBS, was the General Classification Test (GCT) score.[7]

Six significant findings related to racial and ethnic differences in officer performance were reported:

- Compared to Blacks, Whites had significantly higher scores on all five TBS criterion measures.
- Compared to Hispanics, Whites had significantly higher scores on three of the five criterion measures.
- Compared to Others[8], Whites had no differences in performance.
- Compared to all other racial/ethnic categories, Blacks had significantly lower scores on all five criterion measures.
- Compared to Blacks, Hispanics had significantly higher scores on all five criterion measures.
- Hispanics and Others had no significant differences in performance, except on one criterion measure.

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[6]The following briefly describes each of these measures. Academic Average is a compilation of test scores from classroom based courses such as Administration, Law, and Tactics. Military Skills Average is derived from practical application of military skills such as Land Navigation, Marksmanship, and Physical Fitness. Leadership Average is assigned subjectively by the Company Commander. Composite Average is a compilation of the first three averages and will be discussed in detail later.

[7]The GCT was originally developed by the Army in 1940 and with certain modifications and updating, is still in use today. It was originally designed to facilitate the initial classification and assignment of all enlistees and draftees. The test measures vocabulary, arithmetic reasoning, and spatial perception.

[8]The data used in this study was partitioned across four racially based groups: Black, Hispanic, Other, and White. These categories will be further defined in the next chapter, which deals with methodology.

Simply stated, the performance of Whites, Hispanics, and Others differ very little from each other, but the performance of Blacks on the graded TBS criteria was significantly poorer.

The Marine Corps uses educational measurement scores from the Scholastic Aptitude Test (SAT), the American College Test (ACT), and the Armed Services Vocational Aptitude Battery-Electronics Repair Composite (ASVAB EL) score as one basis on which to select prospective officers. Approximately 45 percent of all Marine officers qualify for entry based on their SAT or ACT scores. The remaining 55 percent qualify based on their ASVAB EL score. Those failing to attain a minimum score on one of the three tests may qualify for entry by being granted a waiver, provided their ASVAB EL score is above an alternative minimum. The minimum qualifying scores are: SAT - 1000, ACT - 45, ASVAB EL - 120 (waiverable to 115). The Marine Corps considers the three minimum qualifying scores as equivalent. However, the alternative minimum ASVAB EL waiver score of 115 is equivalent to a score of only 890 on the SAT.

Harrington (1993) examined the relationship between scores on these tests and performance at TBS and between performance at TBS and survivorship in the Marine Corps. The study reported that minorities were granted waivers at a rate twice or more than that of Whites. The study also showed that, regardless of race, those accessions who possessed waivers tended to perform more poorly at TBS. The average class

standing distribution for those qualifying with and without (shown in parentheses) waivers was: top third - 10.25 percent (33.65 percent), middle third - 25.90 percent (34.10 percent), bottom third - 63.85 percent (32.25 percent). Additionally, the study found that those graduating in the top third have a higher survivorship rate than the lower two thirds and the middle third has a higher survivorship rate than the bottom third.

Institutional racial bias was also addressed. In terms of class standing, minorities tended to fall in the lower two thirds in the quantitatively based Academic Average and Military Skills Average, and the subjectively assigned Leadership Average. However, of the three performance variables, Leadership Average had a smaller percentage of minority officers in the lower two thirds than did Academic Average or Military Skills Average. This finding is contrary to what would be expected if intentional institutionalized racial bias was present. If intentional racial bias was present, it would be expected that Leadership Average, the most subjective of the three variables, would contain the largest percentage of minorities in the lower two thirds.

North (1993) found that performance at TBS was related to race, educational measurement test scores, college background, commissioning program, prior service experience, gender, and marital status. Officers possessing the following

characteristics tended to graduate from TBS with a higher class standing:

- Prior Marine Corps experience
- White
- Higher SAT scores
- Science or Engineering major
- Naval Academy or Enlisted Commissioning Program
- Male
- Married
- Aviation or Law program guarantee

E. PROBLEM STATEMENT

The question "Are minorities under-represented in the officer ranks?" leads to many others.

- What is the "right" proportion of minority officers? The racial demographics of the Marine enlisted population closely mirror that of American society. Should the officer population reflect the same?
- Is the average minority officer competitive with the non-minority officer? The Marine Corps' average annual officer accession goal for Blacks hovered at just below 7 percent in recent years, but Blacks comprised just below 5 percent of all college graduates. Has the pressure to access numbers beyond the fair market share placed some of these accessions at risk?
- What personal and demographic characteristics determine success, regardless of race?

Accordingly, this study had three objectives.

- To establish a database of sufficient proportions to track Marine Corps officer career success from accession to the grade of O-4.

- To profile the successful Marine officer; that is, to determine what variables are associated with success or failure incrementally at successive career steps or continuously throughout a career from commissioning to promotion to Field Grade.

- To determine if race alone is linked to differences in performance at each career step.

II. DATA

The population evaluated in this study consisted of all commissioned Marine officers who attended TBS during calendar years (CY) 1980 to 1991. As such, the data contained career information on the 17,946 Marine officers accessed during this 12 year period. There were two exceptions. OCS performance was not included because data was not available for the entire period and Warrant Officers were arbitrarily not included. A twelve year period allowed sufficient time for data from the early cohorts to mature, thus producing a subset of officers selected for major.

A. THE DATABASE

The primary source for the data was Headquarters Master Files (HMF) supplied by the Manpower Analysis Branch. The HMF provided biographical information and historical career data for each officer. TBS performance data was collected and merged with the HMF. The TBS data was drawn from the school's source documents and compiled for the first time in early 1993 for the purposes of the present analysis and others.

Numerous SAS[9] routines were used to manipulate the raw data into a final, usable format. Most manipulations concerned collapsing certain variable levels into meaningful groups. For example, rather than examining the data by individual TBS class, the same data was partitioned by year of class completion. Incomplete data on some officers (N = 76) prevented tracking their entire career and these individuals were excluded from the analysis. The final database contained 17,870 cases. Appendix A, starting on page 60, shows the final SAS file format. The data itself is on the mainframe computer at the Naval Postgraduate School.

B. THE VARIABLES

The classes of variables used in the analysis relate to biographical information and to career history and performance. Table 1 contains a description of all the pertinent variables used in the analysis.[10] Most variables were expressed as discrete, categorical data, far fewer were continuous. Six important variables used throughout the study are defined below.

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[9]This study used SAS, Version 6 for most data manipulation and all statistical analysis. SAS is a registered trademark of the SAS Institute Inc., Cary, N.C., U.S.A.

[10]The variable names in this table are not intuitively interpreted at first. Therefore, a description of each variable is provided to familiarize the reader. Similar interpretations for variable values are included. This will enable the reader to cross-reference the variable names throughout this analysis with the table's narrative description.

- **SSN**: Social Security Numbers were used for identification purposes only. Privacy Act regulations prohibit displaying SSNs when linked to specific personal and/or professional data. SSN was not used in the analysis.

- **RACE/ETHNIC**: The four racial/ethnic categories used by the HMF are: Black, Hispanic, Other, and White. "Other" is comprised of the racial/ethnic categories of American Indian, Alaskan Native, Asian, Pacific Islander, and Unknown/other.

- **MARITAL STATUS**: Categories of marital status used by the HMF include married, single, annulled, separated, widowed, and divorced. Only married and single were used in this study because the other categories contained very small frequencies of response. "Single" was comprised of all categories other than married.

- **COMMISSIONING SOURCE**: A coarse source of entry code was provided by MA. In general, these codes combine several specific commissioning programs into related categories. The categories used are: Platoon Leaders Course (PLC), Officer Candidate Course (OCC), service academy (ACAD), Reserve Officer Training Course (ROTC), Enlisted Commissioning Programs (ECP), Other.

- **COMPOSITE THIRD**: Officer students at TBS are assigned four performance related grades; Academic Average, Leadership Average, Military Skills Average (not used 1980 - 1983), and Composite Average. The Composite Average is derived from the other three grades using the following weightings: Academic Average - 38 percent, Leadership Average - 32 percent, Military Skills Average - 30 percent. Officer students are assigned a Composite Standing based on their Composite Average rank within their TBS class. Each TBS class is grouped into thirds (top, middle, bottom) for duty assignment purposes, based on the Composite Standings. This study used Composite Third as a measure of performance at TBS.

- **OCCUPATIONAL FIELD**: There are over 60 primary MOSs to which an officer can be assigned. This study combined MOSs into occupational fields based on major type of specialty. The categories of occupational fields used were: Aviator (AVIATOR) (both fixed and rotary wing Naval Aviators and Naval Flight Officers), Combat Arms (CBTARMS) (Infantry, Artillery, Armor, Tracked Vehicles), Combat Support (CBTSPT) (Intelligence, Engineer, Communications, Signal Intelligence), and Combat Service Support (CSVCSPT) (all others).

Data on neither the officer applicant population nor the eligible officer population were available from HQMC. The officer applicant population consists of all prospective officer candidates with whom an OSO makes contact. The eligible officer population includes all citizens within the age limits who are college students or graduates and who are physically, mentally, and morally qualified for entry into the Marine Corps. To compensate for this absence of data, data on the U.S. college population was obtained from the U.S. Department of Education. This data provided information on the racial/ethnic, gender, and age distribution of the college population during the period of interest. It was used as a basis to extrapolate certain aspects of pre-accession characteristics of the Marine officer population. This raw data is contained in Appendix B, starting on page 61.

TABLE 1

PERTINENT VARIABLES USED

VARIABLE	DESCRIPTION	VALUES
AMARITAL	Marital status at TBS	M=Married, S=Single
C_THIRD	Composite third at TBS	1=Top, 2=Middle, 3=Bottom
CAPAGE	Age when considered for Captain (Capt)	26-27, 28-29, 30-31, >=31
CCLSNON	Amphibious Warfare School (AWS) Nonresident complete when considered for Capt	0=No, 1=Yes
CMARITAL	Marital status when considered for Capt	M=Married, S=single
COCCFLD	Occupational field when considered for Capt	AVIATOR, CBTARMS, CBTSPT, CSVCSPT
CSEL	Selected to Capt (ever)	0=No, 1=Yes
GCTSUM	GCT score summary	< 120, >= 120
GENDER		F=Female, M=Male
MAJAGE	Age when considered for Major (Maj)	34-41
MCLSRES	Attended AWS by time considered for Maj	0=No, 1=Yes
MILSNON	Command & Staff Nonresident complete when considered for Maj	0=No, 1=Yes
MMARITAL	Marital status when considered for Maj	M=Married, S=Single
MOCCFLD	Occupational field when considered for Maj	AVIATOR, CBTARMS, CBTSPT, CSVCSPT
MSEL	Selected to Maj (ever)	0=No, 1=Yes
OCCFLD	Occupational field assigned at TBS	AVIATOR, CBTARMS, CBTSPT, CSVCSPT
RACE_ETH	Race/Ethnicity	BLACK, HISPANIC, OTHER, WHITE
SOURCE	Commissioning source	XA=PLC, XB=OCC, XC=ACAD, XD=ROTC, XE=ECP, XX=OTHER
SSN		Used for identification only
TBSAGE	Age at TBS	20-35
YR	CY of TBS completion	80-91

III. METHOD

The methodology used in this analysis fell into two distinct approaches; a "population analysis" and a "matched sample analysis." The population analysis evaluated each of the 12 specific cohort groups to explore for differences between them and to identify factors that relate to success. The matched sample analysis evaluated racially homogeneous samples, carefully matched on salient predictors of success, to explore for different promotion rates between races. These approaches are discussed more fully below.

A. POPULATION ANALYSIS

The overall Population Analysis was partitioned into three parts. The first part, a cohort analysis, explored for differences between the twelve cohorts. The second part, a selection rate analysis, sought to identify factors that impacted promotion. The third part, a risk factor analysis, determined the extent to which factors identified by the selection rate analysis were represented in each racial/ethnic category.

1. Cohort Analysis

The Marine officer population was partitioned into 12 cohorts corresponding to CY of attendance at TBS. These 12 cohorts were examined for differences on the variables listed

in Table 1. SAS was used for all computation and statistical analysis throughout this study.

The frequency of response for each variable level was computed. A chi square test was then used to test the significance of differences between the twelve cohorts in the proportion of subjects in each factor level. The college population data were likewise analyzed and compared to those from the Marine officer population. Again, the purpose of this analysis was to explore for and test the significance of differences between cohorts to identify stability or trends across the twelve year period.

2. Selection Rate Analysis

This analysis sought to identify factors associated with success at three major career points; (1) performance at TBS, (2) selection to captain (O-3), and (3) selection to major (O-4). Selection to first lieutenant (O-2) was not considered a major career point since this rank is awarded as a matter of course after 24 months of commissioned service.

Success was defined differently for each career milestone. At TBS, success was defined in terms of class standing as measured by Composite Third ("top," "middle," "bottom"). Since Class Standing has a wide ranging impact on aspects of an officer's career, it was considered to be highly correlated to other possible predictors of success. For example, Lineal Standing and Primary MOS are assigned at TBS

based principally on Class Standing. At the O-3 and O-4 promotion levels, success was simply defined as promotion to that grade.

The data was analyzed to determine which, if any, of the variables predicted success at the three career milestones. For each variable, differences in selection rates to O-3 and O-4 were examined as a function of the level of that variable. Assignment rates to Composite Third at TBS were similarly examined.

3. Risk Factor Analysis

Those factors on which selection rates were found to be contingent (statistically significant) were used as the basis for the Risk Factor Analysis. This analysis compared the proportion of each racial/ethnic group associated with the levels of each risk factor. The Risk Factor Analysis of TBS performance used the entire officer population. Only those officers considered "in-zone" for selection to O-3 and O-4 were used for the analysis at those career milestones.

B. MATCHED SAMPLE ANALYSIS

The objective of the Matched Sample Analysis was to determine if race alone was a factor in promotion rate. The means by which this determination was made was to select samples matched on all salient predictor variables (determined by Selection Rate Analysis) and differing only by race. These matched samples were examined for different selection rates.

The Matched Sample Analysis was applied to two distinctly different data sets. The first data set was partitioned according to variable levels that were associated with an above average or below average selection rate. The second data set was partitioned according to variable levels grouped into thirds according to selection rate. Selection rates for each racial/ethnic group, partitioned as above, were then compared. For example, the Selection Rate Analysis showed that officers graduating TBS in the top and middle thirds were selected to captain at an above average rate. A sample containing only those officers graduating in the top and middle thirds from TBS was constructed. This sample was then examined for differences in selection rate by race. Similar analyses were performed on those officers graduating in the bottom third, who, on average, were selected to captain at a below average rate.

IV. RESULTS

Given the sheer volume of data for the Marine officer database (N = 17,870), the number of cohorts (N = 12), variables (N = 20), career stages (N = 4), and statistical analyses, certain structural and stylistic conventions will be used to present the results. The chapter is divided into two broad sections. The first section presents the results of the Population Analysis, which examined for statistically significant differences across various partitions of the twelve cohorts. The second section presents the results of the Matched Sample Analysis, which sought to demonstrate the relationship of race to selection rates.

All raw data is relegated to appendices where it is indexed and reported in tabular form. In instances where statistical significance is reported in the text, the associated statistic and its significance level are footnoted to provide a smoother flow of text. Only the most salient and general graphics will be included in the text, others will be presented in appendices cited.

A. POPULATION ANALYSIS

Results of the three analyses that comprised the Population Analysis are given below. The cohort analysis examined the twelve cohorts for differences between them. The

selection rate analysis explored for different selection rates at various career points as a function of salient variables. The risk factor analysis linked variables associated with decreased probability of selection to race. For the purpose of these analyses, stages of career progression were defined as pre-accession, performance at TBS, selection to captain, and selection to major.

1. Cohort Analysis

a. *Pre-accession*

For a complete evaluation of the 12 cohort groups, it would have been necessary to examine the Marine Corps pre-accession population to determine if significant differences occurred in the composition of the twelve cohorts at the onset of a career. However, that was not possible because Marine Corps pre-accession data was unavailable. Instead, the U.S. college population during the same period was used as a basis from which to extrapolate demographic characteristics of the Marine officer pre-accession population.

There were roughly 10,000,000 college students for each year examined. Three variables were selected on which to partition the data. These variables were selected because they were the only ones common to both data sets; that is, common to the college population and the Marine Corps database developed for this study. The three variables were racial/ethnic group, age, and gender. Chi square tests were

used to test for significant differences between the cohorts on each of the three variables.

Results of the analysis showed that the proportion of the college student population in each racial/ethnic, age, and gender group varied significantly across the cohorts.[11] However, histograms of the college population show a generally smooth trend from one year to the next. For example, Figure 1 depicts the changing proportions of males and females in the

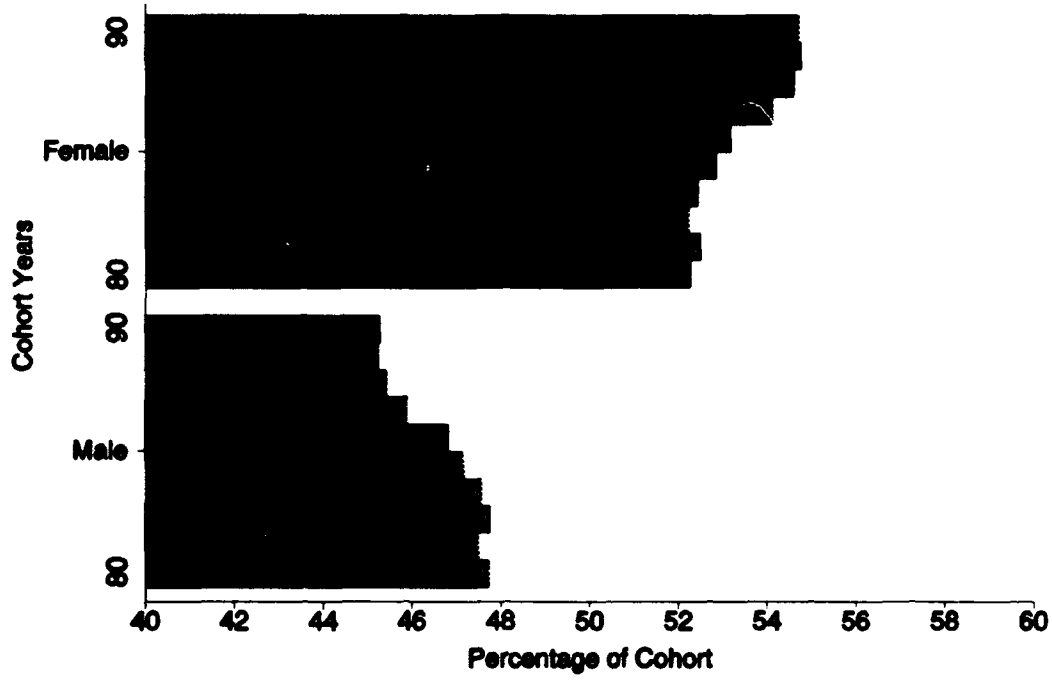

Figure 1 Percent enrolled in college by gender and cohort.

[11]The actual statistics for each variable were: RACE_ETHNIC (chi sq=26798.643, df= , p=0.000); AGE (chi sq=332939.52, df=18, p=0.000); GENDER (chi sq=46417.103, df=10, p=0.000).

college population over the years of interest. The histogram shows the smooth, orderly changes in proportions which, upon further analysis, were demonstrated to be linearly related to cohort year.[12]

The first opportunity to explore for differences in the demographic characteristics of the Marine officer database on the same three variables used in the college population analysis - racial/ethnic group, age, and gender - was in assignment to Composite Third at TBS. In general, like the college population, demographic characteristics of the Marine officer population fluctuated significantly across the years. The variations, however, did not reveal any trends. Instead, they appeared erratic.

For example, Figure 2 shows the proportions of males and females attending TBS across the twelve cohorts. Visual inspection of the TBS data in Figure 2 and comparison with the college population data in Figure 1 reveals the TBS data's erratic fluctuations, contrasted to the college data's smooth trend.[13] Similar results were obtained from

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[12]The linear equation relating the proportion of males attending college to cohort year was: Proportion = 71.56 - 0.29Year + e. The sample correlation coefficient was: r = 0.92. For the proportion of females attending college: Proportion = 28.30 + 0.30 Year + e, r = 0.96.

[13]The linear equation relating the proportion of males attending TBS to cohort year was: Proportion = 89.66 + 0.07Year + e. The sample correlation coefficient was: r = 0.32. For the proportion of females attending TBS: Proportion = 10.34 - 0.07Year + e, r = 0.32.

Figure 2 Percent at TBS by gender and cohort.

comparisons of the two other variables - proportion of racial/ethnic group and age - and are reported in Appendix C at page 62. To the extent that the demographic characteristics reflected in the TBS data could be meaningfully compared with that of the college data, it appeared that the two populations were markedly dissimilar.

b. The Basic School and beyond

The TBS population consisted of 17,870 officers grouped by cohort corresponding to CY of attendance at TBS. The Captain population consisted of 12,772 officers, grouped by cohort, who attended TBS from 1980 to 1988 and who had been

considered in-zone for selection to captain. The Major population consisted of 1,287 officers, grouped by cohort, who attended TBS in 1980 and 1981 and who had been considered in-zone for selection to major. These three populations provide a "snapshot" of the Marine officer population at each career milestone. The factors analyzed at each milestone were chosen for their unique relevance at that career step.

The TBS population (N = 17,870) varied significantly in proportions across the cohorts with respect to all factors examined.[14] These factors and their variable names as contained in the data set are listed below.

- Age at TBS (TBSAGE)
- Marital status at TBS (AMARITAL)
- GCT score, grouped into ranges (GCT_RG)
- Gender (GENDER)
- Occupational field assigned at TBS (OCCFLD)
- Racial/ethnic group (RACE_ETH)
- Commissioning source (SOURCE)

Taken together, the TBS analysis revealed that there were statistically significant year-to-year differences on the seven important demographic and outcome variables

[14]The actual statistics were: TBSAGE (chi sq=428.393, df=99, p=0.000); AMARITAL (chi sq=30.091, df=11, p=0.002) ; GCT_RG (chi sq=204.732, df=33, p=0.000); GENDER (chi sq=28.705, df=11, p=0.003); OCCFLD (chi sq=352.769, df=33, p=0.000); RACE_ETH (chi sq=209.473, df=33, p=0.000); SOURCE (chi sq=1347.149, df=55, p=0.000).

listed above. Moreover, visual examination of the histograms in Appendix D, starting on page 65, revealed that these year-to-year differences did not form a trend line but, instead, were quite erratic. Figure 3, for example, depicts this general finding. Specifically, it depicts the percentage of each cohort assigned to each occupational field at TBS over the years examined.

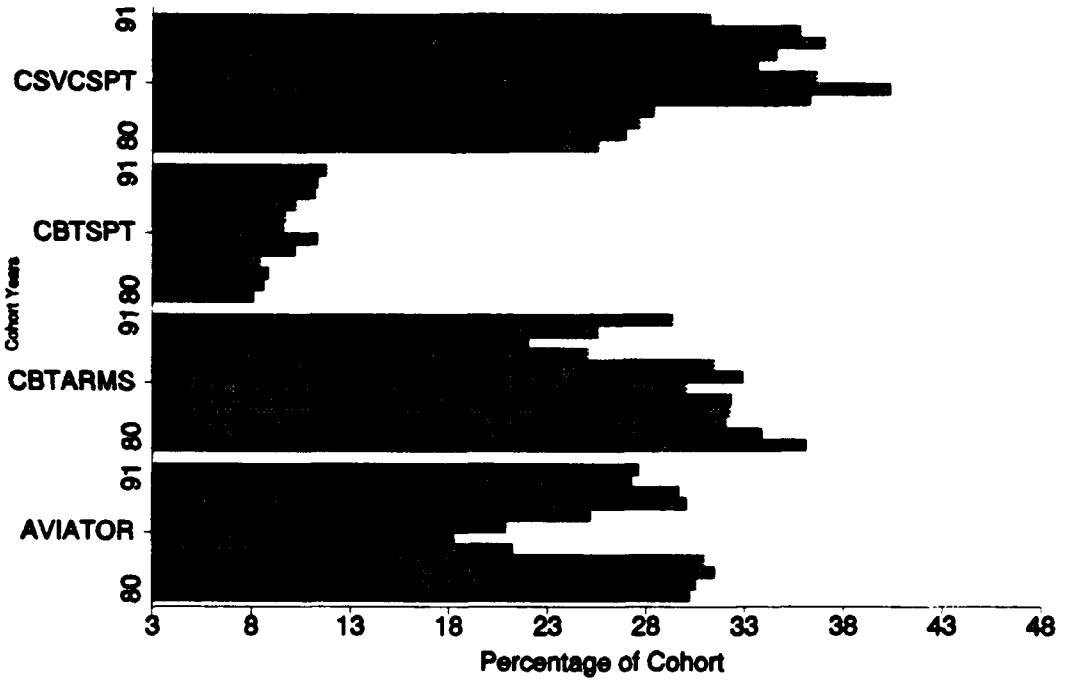

Figure 3 Percent at TBS by occupational field and cohort.

The Captain population (N = 12,772) showed statistically significant differences on four factors.[15]

- Age when considered for selection to captain (CAPAGE)

[15]The actual statistics were: CAPAGE (chi sq=480.649, df=72, p=0.000); CCLSNON (chi sq=284.338, df=8, p=0.000); COCCFLD (chi sq=177.124, df=24, p=0.000); CSEL (chi sq=140.875, df=8, p=0.000).

- Completion of Amphibious Warfare School (AWS) Nonresident package by time considered for captain (CCLSNON)
- Occupational field when considered for captain (COCCFLD)
- Selection to rank of captain (CSEL)

Only one factor of the five considered relevant at this career stage failed to attain statistical significance, namely, marital status when considered for selection to captain (CMARITAL). Again, as in the TBS analysis, the Captain population revealed widely fluctuating proportions across the cohort groups on these factors. Appendix E, starting on page 71, contains histograms for the Captain population.

The Major population (N = 1,287) differed significantly on four of the six factors considered.[16]

- Age when considered for selection to major (MAJAGE)
- Marital status when considered for major (MMARITAL)
- Attendance at AWS Resident course by time considered for major (MCLSRES)
- Selection to rank of major (MSEL)

There were no significant differences in proportions across the cohorts on two factors; Occupational field at time considered for major (MOCCFLD), and Completion of Command and Staff College Nonresident course by time considered for major

[16]The actual statistics were: MAJAGE (chi sq=16.549, df=7, p=0.021); MMARITAL (chi sq=7.855, df=1, p=0.005); MCLSRES (chi sq=5.327, df=1, p=0.021); MSEL (chi sq=19.973, df=1, p=0.000).

(MILSNON). Appendix F, starting on page 74, contains histograms for the Major population.

As previously stated, the Cohort Analysis sought to explore for differences between the cohorts on demographic or outcome variables related to performance or status at each career stage. Table 2 summarizes this analysis and lists those variables on which the cohorts did or did not differ.

TABLE 2

COHORT ANALYSIS		
POPULATION	**SIGNIFICANT DIFFERENCES ACROSS COHORTS BY:**	**NO SIGNIFICANT DIFFERENCES BY:**
TBS	TBSAGE, AMARITAL, GCT_RG, GENDER, OCCFL RACE_ETH, SOURCE	
CAPTAIN	CAPAGE, CCLSNON, COCCFLD, CSEL	CMARITAL
MAJOR	MAJAGE, MMARITAL, MCLSRES, MSEL	MOCCFLD, MILSNON

2. Selection Rate Analysis

This analysis sought to identify the extent to which various factors impacted success at three career milestones; assignment to the top Composite Third at TBS, promotion to

captain, and promotion to major.[17] For this analysis, all 12 cohorts were collapsed to provide one large population.[18]

The analysis showed that six variables were systematically related to assignment to Composite Third at TBS.[19] These variables were:

- Racial/ethnic group (RACE_ETH)
- Gender (GENDER)
- Commissioning source (SOURCE)
- GCT score, partitioned by "less than 120" and "greater than or equal to 120" (GCTSUM)
- Age at TBS (TBSAGE)
- Marital status at TBS (AMARITAL)

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[17]This section of text focuses exclusively upon success; that is, assignment to the top Composite Third at TBS, promotion to captain, and promotion to major. This decision was based on the volume of data, the extent of the analysis, and the desire to make its presentation manageable to the reader. Accordingly, failure data; that is assignment to the bottom third or failure of selection is not reported in the body of the text. These data are available to the interested reader in the various appendices referenced in this chapter.

[18]Since the Cohort Analysis showed that the composition of the 12 cohorts varied from year to year, the selection rate analysis would have had to separately consider each individual cohort should these differences be taken into account. This would entail 36 separate analyses to consider the three career milestones in each of the 12 cohorts. Since the topic of practical interest was to develop a Marine Corps wide perspective of the selection rate issue, and not a detailed examination of specific cohorts, the data were simply collapsed.

[19]The statistics were: RACE_ETH (chi sq=752.665, df=6, p=0.000); GENDER (chi sq=45.098, df=2, p=0.000); SOURCE (chi sq=710.303, df=10, p=0.000); GCTSUM (chi sq=937.252, df=2, p=0.000); TBSAGE (chi sq=192.347, df=18, p=0.000); AMARITAL (chi sq=64,820, df=2, p=0.000).

This finding indicates that levels of each of the six variables listed above affect performance at TBS as measured by Composite Third standing. "High risk" factor levels are defined as those associated with the lowest assignment rate to the top Composite Third. Table 3 presents a summary of the high risk factor levels. Again, these are the variable levels that appeared in the top Composite Third at the lowest rate. For example, from Table 3, regarding the factor racial/ethnic group, of the four levels (BLACK, HISPANIC, OTHER, and WHITE), Blacks had the lowest representation (8 percent) in the top Composite Third at TBS.

TABLE 3

ASSIGNMENT TO TOP THIRD - HIGH RISK LEVELS AVERAGE ASSIGNMENT RATE = 33.33 PERCENT		
FACTOR	**LEVEL**	**ASSIGNMENT RATE PERCENT**
RACE_ETH	BLACK	8.35
GENDER	FEMALE	27.31
SOURCE	XB (OCC)	26.38
GCTSUM	<120	16.82
TBSAGE	23, 24, 25	31.46, 27.78, 28.20
AMARITAL	SINGLE	31.28

Complete frequency tables, including chi square critical values and p-values, detailing assignment to each of the Composite Thirds are provided in Appendix G, starting at page 75.

Selection rates to captain differed significantly on eight variables.[20]

- CY of attendance at TBS (YR)
- Racial/ethnic group (RACE_ETH)
- Commissioning source (SOURCE)
- GCT score (GCTSUM)
- Composite Third at TBS (C_THIRD)
- Occupational field assigned at TBS (OCCFLD)
- Occupational field at captain (COCCFLD)
- AWS Nonresident package completion at captain (CCLSNON)

Notably, selection to captain was not affected by gender (GENDER).

The significant differences in selection rates by occupational field at TBS (OCCFLD) is explained by the presence of aviators. These officers incur a longer initial obligation to the Marine Corps. Their survivorship is a function of a long training pipeline. When AVIATOR was removed from consideration, there were no significant differences in selection rates. However, differences in selection rates by occupational field at time considered (COCCFLD) cannot be explained by the presence of aviators, who

[20]The statistics were: YR (chi sq=140.875, df=8, p=0.000); RACE_ETH (chi sq=76,980, df=3, p=0.000); SOURCE (chi sq=294.819, df=5, p=0.000); GCTSUM (chi sq=98.689, df=1, p=0.000); C_THIRD (chi sq=611.698, df=2, p=0.000); OCCFLD (chi sq=636.282, df=3, p=0.000); COCCFLD (chi sq=696.544, df=3, p=0.000); CCLSNON (chi sq=15.891, df=1, p=0.000).

were selected at a rate of 95 percent. Even with AVIATOR removed, there was still a significant difference (chi square = 67.774, df = 2, p = 0.000). Combat Service Support (CSVCSPT) was selected at a rate of 73 percent, compared to 65 percent for Combat Arms (CBTARMS) and 66 percent for Combat Support (CBTSPT).

While the selection rate for those who had not completed the AWS Nonresident package (CCLSNON) was just slightly less than average (73 percent), those who had completed the package were selected at a higher than average rate of 81 percent.

Table 4 presents a summary of the high risk levels associated with selection to captain. For example, from Table 4, while the average selection rate to captain was 74 percent, the selection rate for Blacks was 60 percent. Complete frequency tables concerning selection rates to captain, including chi square critical values and p-values, are found in Appendix H beginning on page 81.

TABLE 4

SELECTION TO CAPTAIN - HIGH RISK LEVELS AVERAGE SELECTION RATE = 73.83 PERCENT		
FACTOR	**LEVEL**	**SELECTION RATE PERCENT**
RACE_ETH	BLACK	59.94
SOURCE	XB (OCC)	66.26
GCTSUM	<120	65.76
C_THIRD	3	61.24
OCCFLD	CBTSPT	66.36
COCCFLD	CBTARMS	65.48
CCLSNON	0	73.47

A striking change was encountered in results from the Major Selection Rate Analysis. Fewer factors influenced selection and their nature changed. Selection rates to major differed significantly on only five of the eleven factors considered.[21]

- CY of attendance at TBS (YR)
- GCT score (GCTSUM)
- Composite Third at TBS (C_THIRD)
- AWS Resident Course attendance at major (MCLSRES)
- Command and Staff College Nonresident package completion at major (MILSNON)

[21]The statistics were: YR (chi sq=19.973, df=1, p=0.000); GCTSUM (chi sq=5.850, df=1, p=0.016); C_THIRD (chi sq=46.566, df=2, p=0.000); MCLSRES (chi sq=78.548, df=1, p=0.000); MILSNON (chi sq=24.799, df=1, p=0.000).

There were no significant differences in selection rates on the remaining six factors.

- Racial/ethnic group (RACE_ETH)
- Gender (GENDER)
- Commissioning source (SOURCE)
- Occupational field assigned at TBS (OCCFLD)
- Occupational field at captain (COCCFLD)
- Occupational field at major (MOCCFLD)

Those officers who attended AWS by the time considered for major (MCLSRES) were selected at a rate of 73 percent, those not attending AWS were selected at a rate of 48 percent. The selection rate for those completing the Command and Staff College Nonresident program (MILSNON) was 74 percent, compared to 55 percent for those not completing the program.

Table 5 contains high risk levels associated with selection to major. Appendix I, on page 93, contains frequency tables, chi square critical values and p-values.

TABLE 5

SELECTION TO MAJOR - HIGH RISK LEVELS AVERAGE SELECTION RATE = 57.50 PERCENT		
FACTOR	**LEVEL**	**ASSIGNMENT RATE PERCENT**
GCTSUM	<120	49.75
C_THIRD	3	44.69
MCLSRES	0	48.08
MILSNON	0	54.68

3. Risk Factor Analysis

This analysis examined the cross-relationships between a specific factor - racial/ethnic group - and other factors associated with significantly different selection rates. Stated differently, it sought to determine the extent to which each of the four racial/ethnic groups were represented in high risk levels of each factor.

a. Risk Factors at Successive Career Stages

In the TBS population, the proportions of each racial/ethnic group that fell in the various levels of four specific factors were significantly different.[22] These four factors were:

- CY of attendance at TBS (YR)
- Commissioning source (SOURCE)
- GCT score (GCTSUM)
- Composite Third at TBS (C_THIRD)

The clear expectation is that the races would be equally represented in all levels of each of the four factors identified above, but they were not, as the following example using GCT scores demonstrates. The factor GCT Score had two levels - less than 120, and greater than or equal to 120. The percentage of Blacks, Hispanics, Others, and Whites having

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[22]The statistics were: YR (chi sq=209.473, df=33, p=0.000); SOURCE (chi sq=235.984, df=15, p=0.000); GCTSUM (chi sq=659.319, df=3, p=0.000); C_THIRD (chi sq=752.665, df=6, p=0.000).

scores of less than 120 was 52, 35, 26, and 18 respectively. The actual percentages with which the racial groups fall into each of the four factors and their associated levels for the TBS population are given in Appendix J, starting on page 104.

In the Captain population, the proportions of each racial/ethnic group that fell in the various levels of six of seven factors considered were significantly different. These factors were:[23]

- CY of attendance at TBS (YR)
- Commissioning source (SOURCE)
- GCT score (GCTSUM)
- Composite Third at TBS (C_THIRD)
- Occupational field assigned at TBS (OCCFLD)
- Occupational field at captain (COCCFLD)

There were no significant differences by race for completion of the AWS Nonresident package at captain (CCLSNON). Details of the Risk Factor Analysis of the Captain population are found in Appendix K, starting on page 108.

In the Major population, the proportions of each racial/ethnic group that fell in the various levels of six of

[23]The statistics were: YR (chi sq=162.775, df=24, p=0.000); SOURCE (chi sq=207.989, df=15, p=0.000); GCTSUM (chi sq=470.615, df=3, p=0.000); C_THIRD (chi sq=523.740, df=6, p=0.000); OCCFLD (chi sq=148.769, df=9, p=0.000); COCCFLD (chi sq=98.876, df=9, p=0.000).

nine factors considered were significantly different. These six factors were:[24]

- Commissioning source (SOURCE)
- GCT score (GCTSUM)
- Composite Third at TBS (C_THIRD)
- Occupational field assigned at TBS (OCCFLD)
- Occupational field at captain (COCCFLD)
- Occupational field at major (MOCCFLD)

There were no significant differences on the following factors.

- CY of attendance at TBS (YR)
- AWS Resident attendance at major (MCLSRES)
- Command and Staff Nonresident completion at major (MILSNON)

Appendix L, starting on page 115, contains details of the Risk Factor Analysis for the Major population.

b. Risk Factors and the Matched Sample

Since this analysis focused on the role race played in impacting Marine officer success, selection rates to captain were by far the most critical for two reasons. First, selection rates to major (O-4) simply did not differ along

[24]The statistics were: SOURCE (chi sq=99.138, df=15, p=0.000); GCTSUM (chi sq=60.617, df=3, p=0.000); C_THIRD (chi sq=52.898, df=6, p=0.000); OCCFLD (chi sq=19.784, df=9, p=0.019); COCCFLD (chi sq=20.708, df=9, p=0.000); MOCCFLD (chi sq=27.595, df=9, p=0.001).

racial/ethnic lines. Second, while assignment to Composite Third at TBS did differ by racial/ethnic group, it does not impact career length until an officer is considered for selection to captain (O-3). Promotion to first lieutenant (O-2) is not affected since it occurs automatically after 24 months of commissioned service.

The Selection Rate Analysis of the Captain population showed that Blacks were selected at the lowest rate of any racial/ethnic group. Table 6 shows the percentage of Blacks considered in-zone for captain that fell into the high risk levels of each factor shown to significantly affect selection rates to that rank.

TABLE 6

PERCENTAGE OF BLACKS FALLING INTO HIGH RISK LEVELS WHEN CONSIDERED FOR SELECTION TO CAPTAIN		
FACTOR	**LEVEL**	**PERCENT OF BLACKS**
SOURCE	XB (OCC)	26.55
GCTSUM	<120	49.69
C_THIRD	3	70.34
OCCFLD	CBTSPT	10.87
COCCFLD	CBTARMS	26.55
CCLSNON	0	93.63

Of all the levels for each factor listed in the first column of Table 6, those reported in the second column were associated with the lowest selection rates to captain. For the first three factors listed in Table 6, Blacks were

clearly overrepresented in the high risk levels. For example, from Table 4 on page 36 and Table 6 above:

- Roughly 27 percent of all Blacks, a higher proportion than any other racial/ethnic group, were accessed through the Officer Candidate Course, the accession source with the lowest selection rate to captain (66 percent), contrasted to the average selection rate (74 percent).

- Half of all Blacks, a higher proportion than any other racial/ethnic group, scored less than 120 on the GCT, the range with the lowest selection rate to captain (66 percent), contrasted with the average selection rate (74 percent).

- Roughly 70 percent of all Blacks, more than any other racial/ethnic group, were assigned to the bottom Composite Third at TBS, the third with the lowest selection rate to captain (61 percent), contrasted with the average selection rate (74 percent).

Furthermore, from the perspective of overrepresentation in high risk factor levels, over 55 percent of all Blacks were accessed through Platoon Leaders Course (PLC) and Officer Candidate Course (OCC). These were the only two commissioning sources associated with less than average assignment rates to the top third at TBS.

By contrast, with respect to the last three factors listed in Table 6:

- A lower percentage of Blacks (11 percent) than Hispanics (13 percent) were found in Combat Support (CBTSPT), the occupational field assigned at TBS (OCCFLD) with the lowest selection rate to captain (66 percent), contrasted to the average selection rate (74 percent).

- A lower percentage of Blacks (27 percent) than Whites (31 percent) or other minorities (33 percent) was found in Combat Arms (CBTARMS), the occupational field at captain (COCCFLD) with the lowest selection rate (65 percent), contrasted to the average selection rate (74 percent).

- A slightly lower percentage of Blacks (94 percent) than any other group except Hispanics (94 percent) did not complete the Amphibious Warfare School Nonresident package (CCLSNON), the status with the lowest selection rate (73 percent), contrasted to the average selection rate (74 percent).

B. MATCHED SAMPLE ANALYSIS

The Matched Sample Analysis compared selection rates to captain by racial/ethnic groups matched on the three factors found to have the highest percentage of Blacks in high risk levels; that is, Commissioning Source (SOURCE), GCT Score (GCTSUM), and Composite Third at TBS (C_THIRD). Based on the Risk Factor Analysis, these factors appeared to be the most significant in determining differences in selection rates to captain by race. The Matched Sample Analysis used the population of only those officers who were ever considered in-zone for selection to captain.

Factor levels associated with below average selection rates to captain were examined first. For the three salient factors, these levels were: Commissioning Source - Platoon Leaders Course (XA) and Officer Candidate Course (XB); GCT Score - less than 120 (<120); Composite Third at TBS - bottom (3). Selection rates to captain for that portion of the population matched on each of these levels did not differ significantly by race. In other words, officers who accessed through PLC or OCC, and who scored less than 120 on the GCT,

and who graduated from TBS in the bottom third were selected to captain at the same rate, regardless of race. Appendix M, starting on page 124, contains complete frequency tables.

Factor levels associated with above average selection rates were examined next. For the three salient factors, these levels were: Commissioning Source - Service Academy (XC), ROTC (XD), ECP (XE), and Other (XX); GCT Score - greater than or equal to 120 (>=120); Composite Third at TBS - top (1) and middle (2). There were no significant differences in selection rates by race for the sample population matched on these levels. Appendix N, starting on page 128, contains frequency tables for this sample. Figure 4 shows the selection rates for both the "above average" and "below average" matched samples.

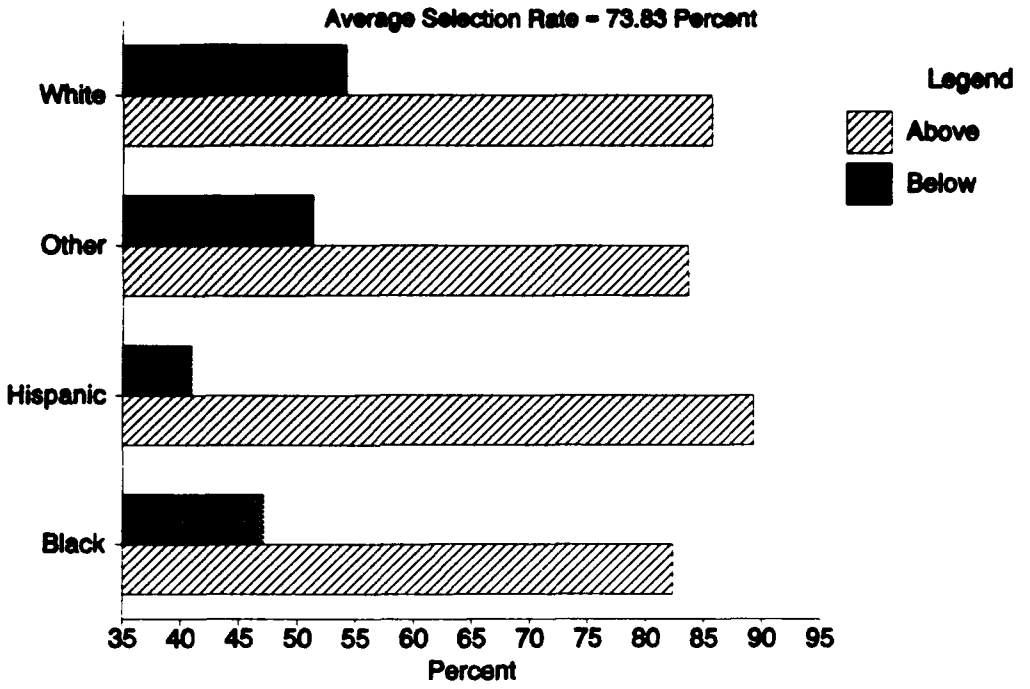


Figure 4 Selection rates to captain: above average versus below average factor levels.

Finally, factor levels were grouped into thirds based on their selection rate distribution. Levels with the highest 1/3 selection rate were grouped into the "Top" third, those with the next highest 1/3 selection rate into the "Middle" third, and those with the lowest 1/3 selection rate into the "Bottom" third. Table 7 presents the exact breakout of factor levels into the three thirds.

TABLE 7

MATCHED SAMPLE FACTOR LEVEL DISTRIBUTION BY THIRDS	
THIRD	**FACTOR AND LEVEL**
TOP	SOURCE: XC, XD GCT: 138 - 160 C_THIRD: 1
MIDDLE	SOURCE: XE, XX GCT: 108 - 137 C_THIRD: 2
BOTTOM	SOURCE: XA, XB GCT: 81 - 107 C_THIRD: 3

For example, the two Commissioning Source (SOURCE) levels in the Top third, Service Academy (XC) and Reserve Officer Training Corps (XD), were associated with higher selection rates than Enlisted Commissioning Programs (XE) and Other (XX) in the Middle third. Figure 5 contains selection rates by race for each of the level groupings of each factor.

For the sample population matched on all levels in the Top third there were no significant differences in selection rates to captain by race. One hundred percent of all Blacks and Hispanics in this sample were selected. Similarly, selection rates for samples matched on all levels of the Middle third and for samples matched on all levels of the Bottom third did not differ significantly by race. Figure 6 graphically presents selection rates by race for each of the thirds. Appendix O, starting on page 132, contains complete frequency tables and chi square results for the selection rate thirds distribution.

FACTOR	PERCENT SELECTED				PERCENT NOT SELECTED			
	BLACK	HISPANIC	OTHER	WHITE	BLACK	HISPANIC	OTHER	WHITE
TBS THIRD								
TOP	81.82	86.44	83.33	84.80	18.18	13.56	16.67	15.20
MIDDLE	71.32	77.92	74.55	75.18	28.68	22.08	25.45	24.82
BOTTOM	53.86	57.42	54.62	62.63	46.14	42.76	45.38	37.37
SOURCE								
XC, XD	69.80	81.33	79.85	83.02	30.20	18.67	20.15	16.98
XE, XX	66.28	81.82	73.33	77.95	33.72	18.18	26.67	22.05
XA, XB	52.28	61.27	62.18	70.28	47.19	38.73	37.82	29.72
GCT								
138 - 160	82.35	84.85	75.38	79.20	17.65	15.15	24.62	20.80
108 - 137	59.37	68.70	68.85	73.96	40.63	31.30	31.15	26.04
81 - 107	57.38	25.00	50.00	57.80	42.62	75.00	50.00	42.20

Figure 5 Selection rates to captain by individual factor level thirds.

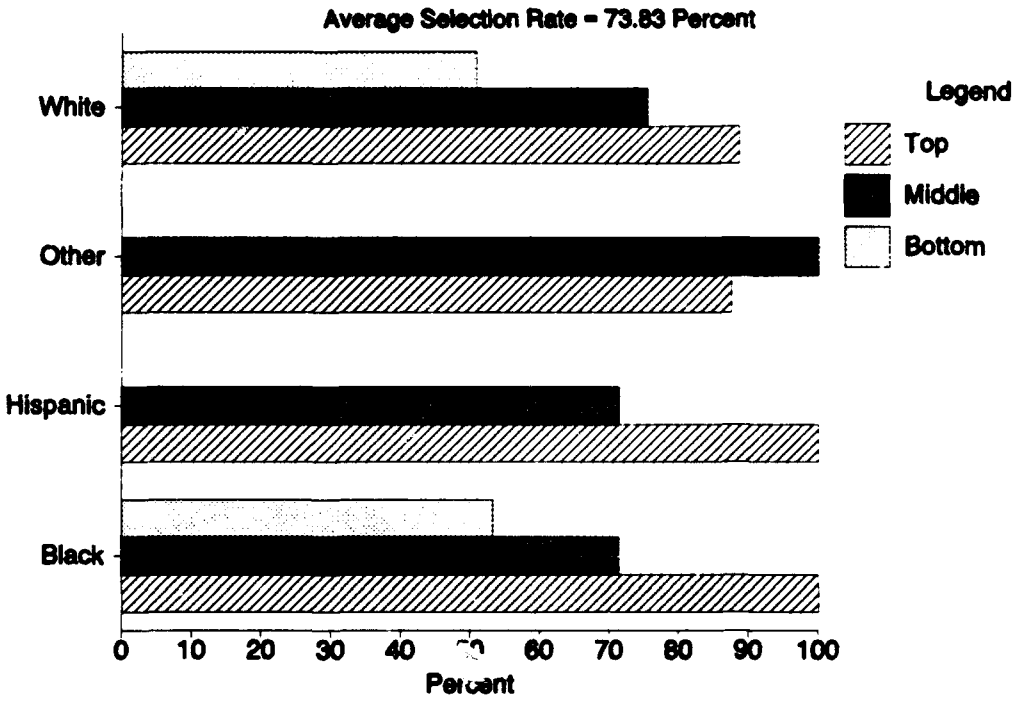


Figure 6 Selection rates to captain matched on all levels by thirds.

V. DISCUSSION

A. SUMMARY OF ANALYSIS

This study analyzed demographic and performance data on the 17,870 Marine officers who attended TBS during calendar years 1980 to 1991. This data was partitioned into 12 cohorts corresponding to year of attendance at TBS. The analysis was divided into two distinct parts: a population analysis and a matched sample analysis. The objectives of each of these analyses are summarized below and are followed by a discussion of the findings.

1. Population Analysis

The Population Analysis consisted of three phases. The first phase was a cohort analysis, the second phase was a selection rate analysis, and the third phase was a risk factor analysis.

a. Cohort Analysis

The Cohort Analysis sought to determine if there were demographic and performance differences between the 12 cohorts at three career milestones: TBS, selection to captain, and selection to major. Additionally, since data on the Marine officer pre-accession population was unavailable, data

on the U.S. college population was used to extrapolate characteristics of the Marine officer population.

b. Selection Rate Analysis

The Selection Rate Analysis sought to identify factors associated with success. For the purposes of this analysis, success was measured by assignment to Composite Third at TBS, selection to captain, and selection to major. Factors associated with low probability of success were identified as risk factors.

c. Risk Factor Analysis

The Risk Factor Analysis sought to determine associations between risk factors and race. Risk factors having the greatest impact on minority selection rates were identified.

2. Matched Sample Analysis

The Matched Sample Analysis sought to examine success at one particular career point, selection to captain, by focusing on those risk factors in which Blacks were overrepresented. Selection rates between racially distinct samples of the population, that were otherwise carefully matched on these risk factors, were compared.

B. SUMMARY OF FINDINGS

The analysis yielded four major findings:

- A force structure instability in terms of key demographic and Manpower, Personnel, and Training (MPT) factors was found in the Marine officer corps.

- **Assignment to Composite Third at TBS and selection rates to captain differed significantly by race, among other factors. Notably, selection rates to major did not differ significantly by race.**
- **Differing racial representation - overrepresentation or underrepresentation - in risk factors related to differences in selection rates were found.**
- **Race did not affect selection rates in samples that were carefully matched on other significant factors.**

1. Force Structure Instability

There were highly erratic fluctuations in the composition of the Marine officer population at all three career stages examined. Proportions of the population found within each level of the demographic and MPT factors varied widely from year to year.

Some of this variation may be attributed to force planning requirements. For instance, the number of officers attending TBS each year, the number of officers assigned to different MOSs each year at TBS, or the number considered for promotion to the next higher grade. However, it was expected that in the long run the proportions, as tested by the chi square test, would either not differ significantly or would change smoothly along a trend line. The differences in the composition of the population across the 12 cohorts revealed marked changes in the force in terms of important demographic and MPT variables. The implication is that "when" an officer enters the Marine Corps has a significant impact on success as defined in this investigation.

The effect of "when" an officer entered service is evident in the differences in selection rates to captain by CY of attendance at TBS (YR). Of the officers graduating TBS in 1988, 83 percent were selected to captain, while only 67 percent of those graduating in 1985 were selected. Also, there was a marked difference in selection rates to major by YR. The selection rate for those graduating TBS in 1980 was 64 percent, contrasted with a selection rate of 52 percent for those graduating in 1981.

2. Differences in Selection Rates

The number and nature of the factors impacting success were not constant at each career milestone. Both assignment to Composite Third at TBS and selection rates to captain differed significantly by all factors considered, including race. The sole exception was that gender did not impact selection to captain. These significant factors reflect both personal characteristics, such as age and race, and performance measures, such as GCT score and TBS third.

Focusing exclusively on race, over the 12 years considered, 8 percent of all Blacks, 20 percent of all Hispanics, 28 percent of all other minorities, and 35 percent of all Whites were assigned to the top third at TBS. Sixty percent of all Blacks, 69 percent of all Hispanics, 70 percent of all other minorities, and 75 percent of all Whites were selected to captain.

Significant factors affecting selection to major were CY of attendance at TBS (YR), GCT Score (GCTSUM), Composite Third (C_THIRD), attendance at AWS (MCLSRES), and completion of the Command and Staff Nonresident course (MILSNON). Notably, selection rates did not differ between racial/ethnic groups.

It is important to note that not only did fewer factors impact selection to major, but also the nature of those that did impact differed. With the exception of YR, all variables that significantly impacted selection to major were performance related. GCT score and Composite Third are readily accepted as indicators of performance in their respective arenas. Attendance at AWS and completion of the Command and Staff Nonresident Course before being considered for promotion to major can be viewed as indicators of an officer's performance in terms of character, desire, or dedication to profession.

The implication is that by the time an officer is considered for field grade, it does not matter "who" he is or "where" she came from. Performance, as viewed by the members of the selection board and as presented to them by fitness reports and the master brief sheet, determines whether an officer will be selected.

3. Racial Representation within Risk Factors

The Risk Factor Analysis focused on identifying the proportion of each racial/ethnic group associated with factor levels shown to be at high risk for failure. The career point of greatest interest proved to be that of selection to captain.

Specifically, a greater proportion of Blacks than any other group fell into the high risk levels of three of the six significant factors impacting selection to captain. Of the six significant factors, these same three had the greatest impact on selection. This indicates that a far greater proportion of Black officers are at risk for non-selection to captain than any other group.

4. Salient Factors Impacting Selection Rates

Selection rates to captain for each racial/ethnic group were compared using samples matched on the three key factors identified during Risk Factor Analysis. Samples were constructed from the "in-zone for captain" population matched on factor levels having an above average selection rate, below average selection rate, and from a selection rate thirds distribution. There were no significant differences in selection rates by race for any sample matched on all similar risk factor levels.

It should be noted, however, that for each of these three comparisons, the proportion of cells in the chi square

tables with expected counts of less than five was greater than 20 percent. This implies that the results of the chi square test (significant difference versus no significant difference) may not be valid. In any case, examination of the selection rates as presented lends valuable insight. The indication is that success is not dependent on race, *per se*.

C. METHODOLOGICAL LIMITATIONS

This analysis was intended as a "first cut" look at the database. It provided a profile of the successful Marine officer by identifying variables associated with success both incrementally at and continuously throughout successive career milestones from TBS to promotion to major. Additionally, it determined that race, in and of itself, did not impact success, but however, was closely tied to other variables which significantly impacted success.

The interactions between race and variables influencing success are evident from close examination of results from the Matched Sample Analysis (see Appendix O). However, this analysis failed to determine the exact nature of these interactions.

Another possible limitation to this analysis is the validity of p-values from the chi square test when applied to large sample sizes. The power of the chi square test, i.e., the probability of rejecting the null hypothesis when it is true, converges to one at all parameter values as the sample

size approaches infinity. Some of the sample sizes used in this analysis were quite large, almost 18,000.

This means that this analysis may have reported that a population or selection rates within that population differed significantly, when in fact it did not. If this were the case in any instance however, it would have been a conservative error. Regardless, this analysis provided accurate frequencies of response from a database never before examined in such detail. For further discussion on the power of hypothesis tests in general, see Mendenhall (1990).

Additionally, the chi square statistic is affected by the number and size of factor levels, which were arbitrarily chosen. Agresti (1990), Gibbons (1992), and Siegel (1988) provide complete discussions on the use and limitations of the chi square test.

VI. CONCLUSIONS AND RECOMMENDATIONS

A. CONCLUSIONS

Results of the Selection Rate Analysis indicated that *de facto* differences existed by race in assignment to Composite Third and selection rates to captain. However, results of the Risk Factor Analysis showed that Blacks were overrepresented in key high risk factors. Results of the Matched Sample Analysis showed that selection rates do not differ by race among samples matched on those high risk factors. The conclusion is that differences in selection rates were not a result of racial bias, but were influenced by salient demographic and outcome variables.

Results of the Cohort Analysis indicated that the composition of the Marine officer population differed significantly from year to year. The impact of yeargroup or "when" an officer accesses was shown in the Selection Rate Analysis to significantly impact selection rates to all grades examined. This instability, inherent in the Marine officer population, has consequences for long range force planning. The conclusion is that adequate manpower planning cannot take place because of the lack of steady state conditions. In this analysis, the effect was that the Marine officer population

could not be compared by cohort at each of the career milestones.

B. RECOMMENDATIONS

Data collection for the purposes of long term study of officer performance should be initiated. This implies maintenance of, and addition to, the database used in this study. While detailed histories exist on each officer after commissioning, data on the applicant officer population and officer candidate population is scarce. Hard copy, sole source historical data from TBS should be encoded into a magnetic form database and maintained for future use. Formal liaison between the Manpower Analysis, Evaluation and Coordination Branch (MA) and the Naval Postgraduate School, similar to the relationship between MA and the Center for Naval Analyses, should be established for the purpose of facilitating future analysis.

Recommendations for further study include the application of log-linear modeling techniques to the data used in this study. The goal of such analysis would be to fully examine the interactions between the independent variable "success" (variously defined) and the dependent variables of race and other factors impacting selection rates.

Additional study should include an in depth examination of the long term performance of officers based on the various educational measurement qualifying tests (SAT, ACT, and ASVAB

EL). The equivalency scores from each of these tests should be re-validated.

Effort should be made to provide a basis for explanation of the fluctuation between cohorts of the Marine officer population. These fluctuations surely impact force structure planning, including officer accession and Affirmative Action initiatives.

Finally, it is known that minority officer accession policies, as well as other policies affecting minority officer retention, are currently being or have been recently reviewed in depth. It is recommended that particular attention be paid to efforts to increase the proportion of minority officers accessed from low risk levels of commissioning source and educational measurement scores. Only through accession of competitive minority junior officers will the Marine Corps succeed in increasing the number of minority officers in all grades.

APPENDIX A

--Alphabetic List of Variables and Attributes-----

#	Variable	Type	Len	Pos
14	AC_AVG	Num	8	68
10	AC_STAND	Num	8	36
19	AC_THIRD	Num	8	102
47	AGE	Char	2	204
23	AMARITAL	Char	1	130
22	AMOS	Char	4	126
13	C_AVG	Num	8	60
9	C_STAND	Num	8	28
18	C_THIRD	Num	8	94
50	CAPAGE	Num	2	210
30	CCLSNON	Char	1	154
29	CCLSPES	Char	1	153
26	CFY	Num	8	143
32	CILSNON	Char	1	156
31	CILSPES	Char	1	155
27	CINZONE	Char	1	151
33	CMARITAL	Char	1	157
34	CMOS	Char	4	158
52	COCCFLD	Char	8	214
28	CSEL	Char	1	152
24	DOB	Num	8	131
17	EDMAJOR	Char	2	92
5	ETHNIC	Char	1	13
55	GCAPAGE	Char	5	235
6	GCT	Num	8	14
45	GCT_PG	Char	7	189
57	GCTSUM	Char	5	245
3	GENDER	Char	1	11
56	GMAJAGE	Char	5	240
54	GMSAGE	Char	5	230
15	L_AVG	Num	8	76
11	L_STAND	Num	8	44
20	L_THIRD	Num	8	110
51	MAJAGE	Num	2	212
39	MCLSNON	Char	1	173
38	MCLSPES	Char	1	172
35	MFY	Num	8	162
41	MILSNON	Char	1	175
40	MILSPES	Char	1	174
36	MINZONE	Char	1	170
42	MMARITAL	Char	1	176
43	MMOS	Char	4	177
53	MOCCFLD	Char	8	222
16	MS_AVG	Num	8	84
12	MS_STAND	Num	8	52
21	MS_THIRD	Num	8	118
37	MSEL	Char	1	171
46	OCCFLD	Char	8	196
4	RACE	Char	1	12
44	RACE_ETH	Char	8	181
25	SOE	Char	4	139
8	SOURCE	Char	2	26
2	SSN	Char	9	2
49	TBSAGE	Num	2	208
7	TBSCLASS	Char	4	22
48	YOB	Num	2	206
1	YR	Num	2	0

APPENDIX B

NUMBER ENROLLED IN COLLEGE BY RACE/ETHNIC AND COHORT

YR	BLACK	WHITE	TOTAL
80	781626	6988800	7770426
81	809731	7087322	7897053
82	812716	7132061	7944777
83	785856	7001680	7787536
84	825804	7068362	7894166
85	788116	7152600	7940716
86	866364	6863076	7729440
87	917470	7166016	8083486
88	827331	7301529	8128860
89	906750	7415928	8322678
90	960894	7451488	8412382

SOURCE: U.S DEPARTMENT OF EDUCATION, NATIONAL CENTER FOR EDUCATION STATISTICS. DIGEST OF EDUCATION STATISTICS. WASHINGTON, D.C., 1992.

NUMBER ENROLLED IN COLLEGE BY GENDER AND COHORT

YR	FEMALE	MALE	TOTAL
80	5475000	5000000	1.048E7
81	5646000	5109000	1.076E7
82	5655000	5170000	1.083E7
83	5688000	5158000	1.085E7
84	5611000	5007000	1.062E7
85	5365000	4962000	1.060E7
86	5780000	5018000	1.080E7
87	5978000	5068000	1.105E7
88	6179000	5138000	1.132E7
89	6432000	5311000	1.174E7
90	6524000	5399000	1.192E7

SOURCE: U.S. DEPARTMENT OF EDUCATION, NATIONAL CENTER FOR EDUCATION STATISTICS. DIGEST OF EDUCATION STATISTICS. WASHINGTON, D.C., 1992.

NUMBER ENROLLED IN COLLEGE BY AGE AND COHORT

YR	16TO21	22TO34	35PLUS	TOTAL
80	6316425	3310100	848475	1.048E7
81	6259410	3538395	946440	1.074E7
82	6375925	3572250	876825	1.083E7
83	6203912	3676794	965294	1.085E7
84	6105350	3631365	881294	1.062E7
85	6050887	3539398	1006715	1.060E7
86	5863314	3790098	1144588	1.080E7
87	6296220	3600996	1148784	1.105E7
88	6269618	3700659	1346723	1.132E7
89	6364706	3945648	1432646	1.174E7

SOURCE: U.S. DEPARTMENT OF EDUCATION, NATIONAL CENTER FOR EDUCATION STATISTICS. THE CONDITION OF EDUCATION, 1991, VOLUME 2, POSTSECONDARY EDUCATION. WASHINGTON, D.C., 1991.

APPENDIX C

ENROLLED IN COLLEGE BY RACE_ETH AS PERCENT OF COHORT

RACE_ETH	YR		PCTOFYR Sum
BLACK	80	*****	10.0600
	81	*****	10.2500
	82	*****	10.2300
	83	*****	10.0900
	84	*****	10.4600
	85	*****	9.9200
	86	******	11.2100
	87	******	11.3500
	88	*****	10.1800
	89	*****	10.8900
	90	******	11.4200
WHITE	80	**********	89.9400
	81	**********	89.7500
	82	**********	89.7700
	83	**********	89.9100
	84	**********	89.5400
	85	**********	90.0800
	86	**********	88.7900
	87	**********	88.6500
	88	**********	89.8200
	89	**********	89.1100
	90	**********	88.5800

10 20 30 40 50 60 70 80 90

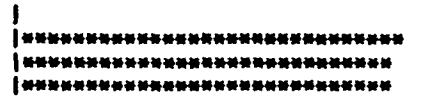
PCTOFYR Sum

GENDER	YR		PCTOFYR Sum
FEMALE	80	**********	52.27000
	81	**********	52.50000
	82	**********	52.24000
	83	**********	52.44000
	84	**********	52.84000
	85	**********	53.18000
	86	**********	53.53000
	87	**********	54.12000
	88	**********	54.60000
	89	**********	54.77000
	90	**********	54.72000
MALE	80	**********	47.73000
	81	**********	47.50000
	82	**********	47.76000
	83	**********	47.56000
	84	**********	47.16000
	85	**********	46.62000
	86	**********	46.47000
	87	**********	45.88000
	88	**********	45.40000
	89	**********	45.23000
	90	**********	45.28000

10 20 30 40 50

PCTOFYR Sum

AGE	YR	PCTOFYR Sum
16TO21	80	60.30000
	81	58.26000
	82	58.90000
	83	57.20000
	84	57.50000
	85	57.10000
	86	54.30000
	87	57.00000
	88	55.40000
	89	54.20000
22TO34	80	31.60000
	81	32.93000
	82	33.00000
	83	33.90000
	84	34.20000
	85	33.40000
	86	35.10000
	87	32.60000
	88	32.79000
	89	33.60000
35PLUS	80	8.10000
	81	8.81000
	82	8.10000
	83	8.90000
	84	8.30000
	85	9.50000
	86	10.60000
	87	10.40000
	88	11.90000
	89	12.20000



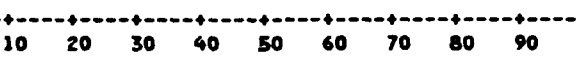
APPENDIX D

TBSAGE AS PERCENT OF COHORT

TBSAGE	YR		PCTOFYR Sum
		|	
<=21	80	|*	1.35000
	81	|*	1.16000
	82	|	0.67000
	83	|	0.86000
	84	|	0.72000
	85	|	0.95000
	86	|	0.44000
	87	|	0.60000
	88	|	0.86000
	89	|	0.19000
	90	|	0.26000
	91	|	0.33000
		|	
>=28	80	|***	6.22000
	81	|***	6.10000
	82	|***	6.72000
	83	|****	8.33000
	84	|***	5.99000
	85	|***	6.28000
	86	|***	6.49000
	87	|*****	9.30000
	88	|***	5.51000
	89	|*****	9.03000
	90	|****	7.81000
	91	|*****	10.28000
		|	
22-24	80	|**********************************	71.22000
	81	|**********************************	71.10000
	82	|**********************************	70.58000
	83	|********************************	63.28000
	84	|**********************************	73.82000
	85	|**********************************	73.48000
	86	|**********************************	75.52000
	87	|********************************	65.30000
	88	|**********************************	73.21000
	89	|********************************	59.90000
	90	|**********************************	68.17000
	91	|**********************************	68.16000
		|	
25-27	80	|**********	21.22000
	81	|**********	21.64000
	82	|**********	22.03000
	83	|**********	27.53000
	84	|**********	19.47000
	85	|**********	19.28000
	86	|*********	17.55000
	87	|**********	24.81000
	88	|**********	20.41000
	89	|**********	30.08000
	90	|**********	23.76000
	91	|**********	21.23000
		|	
		----+----+----+----+----+----+----+---	
		10 20 30 40 50 60 70	

GENDER AS PERCENT OF COHORT 1
21:47 Saturday, May 29, 1993

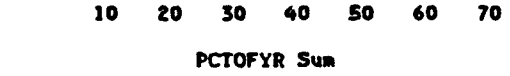
GENDER	YR	PCTOFYR Sum
FEMALE	80	4.2600
	81	5.4800
	82	4.6000
	83	3.9700
	84	3.8900
	85	3.3600
	86	2.9500
	87	4.0000
	88	4.2200
	89	0.0000
	90	2.5200
	91	4.3900
MALE	80	95.7400
	81	94.5200
	82	95.4000
	83	96.0300
	84	96.1100
	85	96.6400
	86	97.0500
	87	96.0000
	88	95.7800
	89	94.9700
	90	97.4800
	91	95.6100



PCTOFYR Sum

MARITAL STATUS AT TBS AS PERCENT OF COHORT 1
14:44 Tuesday, June 1, 1993

AMARITAL	YR	PCTOFYR Sum
MARRIED	80	37.09000
	81	30.96000
	82	34.87000
	83	36.74000
	84	36.13000
	85	36.74000
	86	34.07000
	87	35.42000
	88	33.42000
	89	36.43000
	90	36.15000
	91	37.06000
NOTMAR	80	62.91000
	81	69.04000
	82	65.13000
	83	61.15000
	84	63.87000
	85	63.26000
	86	65.93000
	87	64.58000
	88	66.58000
	89	63.57000
	90	63.85000
	91	62.94000



PCTOFYR Sum

GCT_RG AS PERCENT OF COHORT 1

22:45 Saturday, May 29, 1993

GCT_RG	YR		PCTOFYR Sum
<120	80	********	13.20000
	81	*********	16.00000
	82	********	14.00000
	83	********	14.90000
	84	*********	16.20000
	85	*******	12.40000
	86	********	13.30000
	87	*********	16.80000
	88	**********	20.20000
	89	**********	22.40000
	90	**********	19.90000
	91	**********	19.70000
>=140	80	*********	16.70000
	81	*********	16.60000
	82	**********	17.10000
	83	*********	15.10000
	84	**********	17.90000
	85	**********	18.60000
	86	********	14.10000
	87	********	13.80000
	88	********	13.90000
	89	*****	10.20000
	90	*****	9.90000
	91	*****	10.50000
120-139	80	**********	63.90000
	81	**********	64.70000
	82	**********	66.00000
	83	**********	68.30000
	84	**********	64.70000
	85	**********	56.10000
	86	**********	53.10000
	87	**********	68.20000
	88	**********	64.60000
	89	**********	64.90000
	90	**********	55.90000
	91	**********	68.70000

10 20 30 40 50 60

PCTOFYR Sum

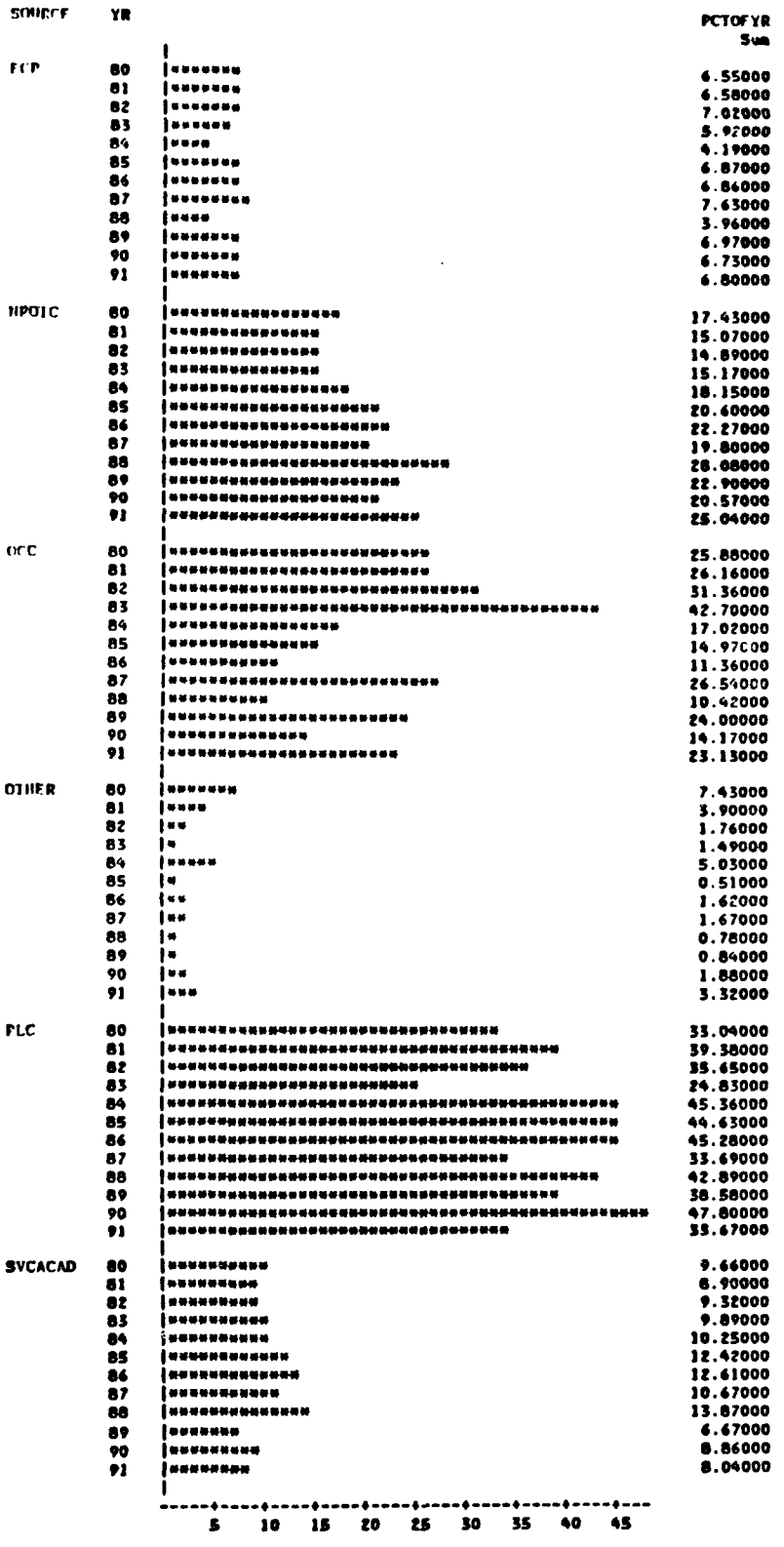
OCCFLD	YR		PCTOFYR Sum
AVIATOR	80	**********	30.20000
	81	**********	30.55000
	82	**********	31.48000
	83	**********	30.92000
	84	*******	21.21000
	85	******	18.26000
	86	*******	20.87000
	87	********	25.16000
	88	**********	30.06000
	89	**********	29.66000
	90	*********	27.24000
	91	*********	27.61000
CBTARMS	80	**********	36.08000
	81	**********	33.84000
	82	**********	32.02000
	83	**********	32.24000
	84	**********	32.29000
	85	*********	30.02000
	86	**********	32.89000
	87	**********	31.43000
	88	********	25.06000
	89	*******	22.05000
	90	*********	25.56000
	91	**********	29.35000
CBTSPT	80	**	8.11000
	81	***	8.63000
	82	***	8.84000
	83	**	8.45000
	84	****	10.19000
	85	****	11.32000
	86	****	9.59000
	87	****	9.72000
	88	****	10.25000
	89	****	11.22000
	90	****	11.36000
	91	****	11.77000
CSVCSPT	80	********	25.61000
	81	*********	26.99000
	82	**********	27.66000
	83	**********	28.39000
	84	**********	36.31000
	85	**********	40.39000
	86	**********	36.65000
	87	**********	33.69000
	88	**********	34.63000
	89	**********	37.07000
	90	**********	35.83000
	91	**********	31.26000

5 10 15 20 25 30 35 40

RACE_ETH	YR		PCTOFYR Sum
BLACK	80	**	3.8500
	81	**	4.4500
	82	**	3.9300
	83	***	5.4000
	84	***	6.3500
	85	***	6.2100
	86	***	5.4600
	87	***	5.2500
	88	***	5.5100
	89	***	5.5400
	90	**	4.9700
	91		0.0000
HISPANIC	80		0.5400
	81		0.5500
	82	*	1.0900
	83	*	2.4100
	84	*	2.4600
	85	*	2.1900
	86	**	3.8300
	87	*	2.8000
	88	**	4.3100
	89	**	3.5500
	90	**	4.0700
	91	**	3.5700
OTHER	80	*	2.5700
	81	*	1.4400
	82	**	3.9300
	83	*	1.5500
	84	*	2.2800
	85	*	1.9000
	86	*	2.5100
	87	**	3.5800
	88	**	4.2200
	89	**	4.5100
	90	**	4.1300
	91	**	3.6500
WHITE	80	**********	93.0400
	81	**********	93.5600
	82	**********	91.0400
	83	*********	90.6300
	84	*********	88.9200
	85	**********	89.7000
	86	*********	88.2000
	87	*********	88.3700
	88	********	85.9600
	89	*********	86.4000
	90	*********	86.8300
	91	*********	88.7200

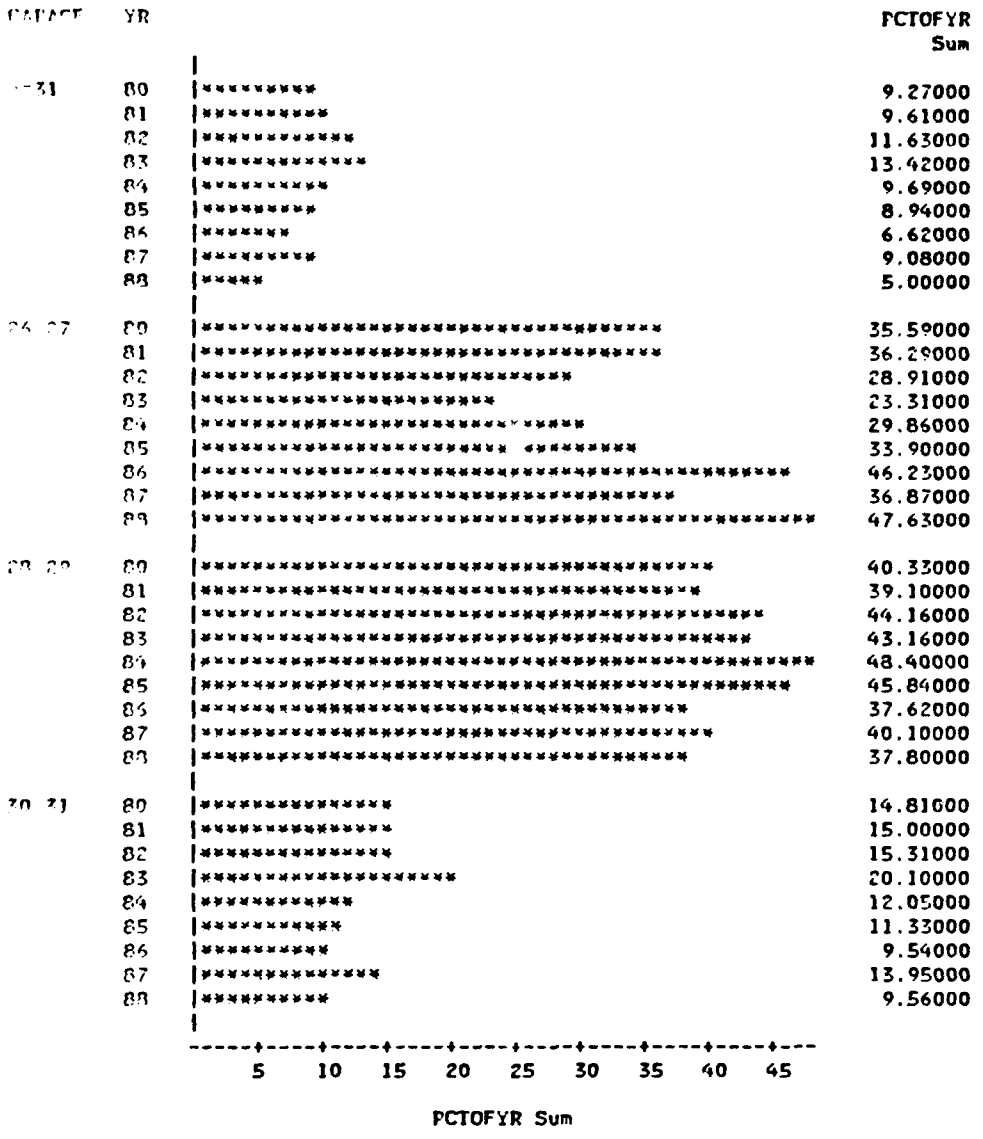
10 20 30 40 50 60 70 80 90

SOURCE AS PERCENT OF COHORT



APPENDIX E

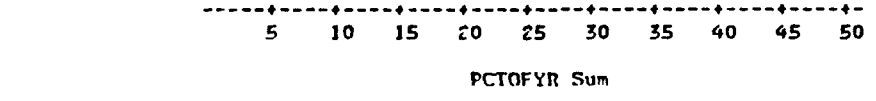
CAPAGE AS PERCENT OF COHORT



MARITAL STATUS AT SELECTION TO CAPTAIN AS PERCENT OF COHORT 1
14:56 Tuesday, June 1, 1993

MARITAL	YR		PCTOFYR Sum
		|	
MARRIED	80	|**********	50.88000
	81	|**********	49.52000
	82	|**********	52.54000
	83	|**********	49.66000
	84	|**********	48.53000
	85	|**********	50.84000
	86	|**********	50.00000
	87	|**********	49.73000
	88	|**********	48.41000
		|	
OTHER	80	|**********	49.12000
	81	|**********	50.48000
	82	|**********	47.46000
	83	|**********	50.34000
	84	|**********	51.47000
	85	|**********	49.16000
	86	|**********	50.00000
	87	|**********	50.27000
	88	|**********	51.59000
		|	
		+----+----+----+----+----+-	
		10 20 30 40 50	
		PCTOFYR Sum	

[illegible]	YR	PCTOFYR Sum
AVIATOR	80	16.76000
	81	16.99000
	82	16.95000
	83	23.33000
	84	14.14000
	85	14.39000
	86	12.02000
	87	13.30000
	88	14.73000
[illegible]PIANIS	80	33.72000
	81	30.89000
	82	29.42000
	83	24.14000
	84	24.75000
	85	27.25000
	86	31.49000
	87	30.41000
	88	25.32000
[illegible]PIGRI	80	9.19000
	81	8.36000
	82	9.08000
	83	8.39000
	84	10.49000
	85	11.18000
	86	10.40000
	87	10.79000
	88	11.11000
[illegible]SYCOLOGI	80	40.34000
	81	43.77000
	82	44.55000
	83	44.14000
	84	50.63000
	85	47.19000
	86	46.09000
	87	45.50000
	88	48.84000



APPENDIX F

MAJACF AS PERCENT OF COHORT

MAJACF	YR		PCTOFYR Sum
		|	
[illegible]26	80	|**********	39.53000
	81	|**********	45.33000
		|	
34	80	|**********	36.15000
	81	|**********	31.70000
		|	
35	80	|**********	24.32000
	81	|**********	22.96000
		|	

5 10 15 20 25 30 35 40 45

PCTOFYR Sum

MARITAL STATUS AT SELECTION TO MAJOR AS PERCENT OF COHORT 1
15:13 Tuesday, June 1, 1993

MARITAL	YR		PCTOFYR Sum
		|	
MARRIED	80	|**********	34.66000
	81	|**********	39.66000
		|	
NOTMAR	80	|**********	65.34000
	81	|**********	60.34000
		|	

10 20 30 40 50 60

PCTOFYR Sum

OCCFLD AT SELECTION TO MAJOR AS PERCENT OF COHORT 1
15:24 Tuesday, June 1, 1993

OCCFLD	YR		PCTOFYR Sum
		|	
AVIATOR	80	|******	11.76000
	81	|******	12.33000
		|	
CBTARMS	80	|******	12.57000
	81	|***	5.55000
		|	
CBISPT	80	|**	4.46000
	81	|***	5.55000
		|	
CSVCSPT	80	|**********	71.01000
	81	|**********	68.29000
		|	

10 20 30 40 50 60 70

PCTOFYR Sum

APPENDIX G

ASSIGNMENT TO TOP THIRD AT IBS

TABLE OF C_THIRD BY RACE_ETH

C_THIRD RACE_ETH

Frequency / Percent / Row Pct / Col Pct	BLACK	HISPANIC	OTHER	WHITE	Total
1	76	92	150	5616	5934
	0.43	0.51	0.84	31.43	33.21
	1.28	1.55	2.53	94.64	
	8.35	20.13	27.99	35.17	
2	183	136	175	5487	5981
	1.02	0.76	0.98	30.71	33.47
	3.06	2.27	2.93	91.74	
	20.11	29.76	32.65	34.36	
3	651	229	211	4864	5955
	3.64	1.28	1.18	27.22	33.32
	10.93	3.85	3.54	81.68	
	71.54	50.11	39.37	30.46	
Total	910	457	536	15967	17870
	5.09	2.56	3.00	89.35	100.00

STATISTICS FOR TABLE OF C_THIRD BY RACE_ETH

Statistic	DF	Value	Prob
Chi-Square	6	752.665	0.000
Likelihood Ratio Chi-Square	6	733.929	0.000
Mantel-Haenszel Chi-Square	1	662.859	0.000
Phi Coefficient		0.205	
Contingency Coefficient		0.201	
Cramer's V		0.145	

Sample Size = 17870

ASSIGNMENT TO TOP THIRD AT TBS

TABLE OF C_THIRD BY GENDER

C_THIRD	GENDER		
Frequency Percent Row Pct Col Pct	F	M	Total
1	108 1.11 3.34 27.31	5736 32.11 96.66 33.46	5934 33.21
2	202 1.13 3.38 27.86	5778 32.34 96.62 33.71	5980 33.47
3	395 1.82 5.46 44.83	5627 31.50 94.54 32.83	5952 33.31
Total	725 4.06	17141 95.94	17866 100.00

Frequency Missing = 4

STATISTICS FOR TABLE OF C_THIRD BY GENDER

Statistic	DF	Value	Prob
Chi-Square	2	45.098	0.000
Likelihood Ratio Chi-Square	2	43.169	0.000
Mantel-Haenszel Chi-Square	1	34.452	0.000
Phi Coefficient		0.050	
Contingency Coefficient		0.050	
Cramer's V		0.050	

Effective Sample Size = 17866
Frequency Missing = 4

ASSIGNMENT TO TOP THIRD AT TPS

TABLE OF C_THIRD BY SOURCE

C_THIRD SOURCE

Frequency / Percent / Row Pct / Col Pct	XA	XB	XC	XD	XE	XX	Total
1	1863	1083	670	1448	619	251	5934
	10.43	6.06	3.75	8.10	3.46	1.40	33.21
	31.40	18.25	11.29	24.40	10.43	4.23	
	27.11	26.38	37.45	41.28	54.44	55.29	
2	2461	1396	584	1151	301	87	5980
	13.77	7.81	3.27	6.44	1.68	0.49	33.47
	41.15	23.34	9.77	19.25	5.03	1.45	
	35.81	34.01	32.64	32.81	26.47	19.16	
3	2549	1626	535	909	217	116	5952
	14.27	9.10	2.99	5.09	1.21	0.65	33.31
	42.83	27.32	8.99	15.27	3.65	1.95	
	37.09	39.61	29.90	25.91	19.09	25.55	
Total	6873	4105	1789	3508	1137	454	17866
	38.47	22.98	10.01	19.64	6.36	2.54	100.00

Frequency Missing = 4

STATISTICS FOR TABLE OF C_THIRD BY SOURCE

Statistic	DF	Value	Prob
Chi-Square	10	710.303	0.000
Likelihood Ratio Chi-Square	10	698.942	0.000
Mantel-Haenszel Chi-Square	1	537.169	0.000
Phi Coefficient		0.199	
Contingency Coefficient		0.196	
Cramer's V		0.141	

Effective Sample Size = 17866
Frequency Missing = 4

ASSIGNMENT TO TOP THIRD AT IDS

TABLE OF C_THIRD BY GCTSUM

C_THIRD GCTSUM

Frequency Percent Row Pct Col Pct	<120	>=120	Total
1	627	5307	5934
	3.51	29.70	33.21
	10.57	89.43	
	16.82	37.52	
2	1128	4853	5981
	6.31	27.16	33.47
	18.86	81.14	
	30.27	34.31	
3	1972	3983	5955
	11.04	22.29	33.32
	33.12	66.88	
	52.91	28.16	
Total	3727	14143	17870
	20.86	79.14	100.00

STATISTICS FOR TABLE OF C_THIRD BY GCTSUM

Statistic	DF	Value	Prob
Chi-Square	2	937.252	0.000
Likelihood Ratio Chi-Square	2	942.303	0.000
Mantel-Haenszel Chi-Square	1	915.700	0.000
Phi Coefficient		0.229	
Contingency Coefficient		0.223	
Cramer's V		0.229	

Sample Size = 17870

ASSIGNMENT TO TOP THIRD AT IBS

TABLE OF C_THIRD BY IBSAGE

C_THIRD IBSAGE

Frequency / Percent / Row Pct / Col Pct	21	22	23	24	25	Total
1	47	1565	1599	837	482	5034
	0.26	8.76	8.95	4.68	2.70	33.21
	0.79	26.37	26.95	14.11	8.12	
	37.60	36.58	31.46	27.78	28.20	
2	41	1456	1783	1049	555	5981
	0.23	8.15	9.98	5.87	3.11	33.47
	0.69	24.34	29.81	17.54	9.28	
	32.80	34.03	35.08	34.82	32.48	
3	37	1257	1700	1127	672	5955
	0.21	7.03	9.51	6.31	3.76	33.32
	0.62	21.11	28.55	18.93	11.28	
	29.60	29.38	33.45	37.40	39.32	
Total	125	4278	5082	3013	1709	17870
	0.70	23.94	28.44	16.86	9.56	100.00

(Continued)

TABLE OF C_THIRD BY IBSAGE

C_THIRD IBSAGE

Frequency / Percent / Row Pct / Col Pct	26	27	28	29	30	Total
1	468	376	273	173	114	5034
	2.62	2.10	1.53	0.97	0.64	33.21
	7.89	6.34	4.60	2.92	1.92	
	34.46	38.02	39.74	46.13	44.88	
2	438	301	191	103	64	5981
	2.45	1.68	1.07	0.58	0.36	33.47
	7.32	5.03	3.19	1.72	1.07	
	32.25	30.43	27.80	27.47	25.20	
3	452	312	223	99	76	5955
	2.53	1.75	1.25	0.55	0.43	33.32
	7.59	5.24	3.74	1.66	1.28	
	33.28	31.55	32.46	26.40	29.92	
Total	1358	989	687	375	254	17870
	7.60	5.53	3.84	2.10	1.42	100.00

STATISTICS FOR TABLE OF C_THIRD BY IBSAGE

Statistic	DF	Value	Prob
Chi-Square	18	192.347	0.000
Likelihood Ratio Chi-Square	18	191.169	0.000
Mantel-Haenszel Chi-Square	1	1.791	0.181
Phi Coefficient		0.104	
Contingency Coefficient		0.103	
Cramer's V		0.073	

Sample Size = 17870

ASSIGNMENT TO TOP THIRD AT IPS

TABLE OF C_THIRD BY MARITAL

C_THIRD	MARITAL		
Frequency / Percent / Row Pct / Col Pct	M	S	Total
1	2338 13.08 39.40 36.67	3596 20.12 60.60 31.28	5934 33.21
2	2110 11.81 35.28 33.10	3871 21.66 64.72 33.68	5981 33.47
3	1927 10.78 32.36 30.23	4028 22.54 67.64 35.04	5955 33.32
Total	6375 35.67	11495 64.33	17870 100.00

STATISTICS FOR TABLE OF C_THIRD BY MARITAL

Statistic	DF	Value	Prob
Chi-Square	2	64.820	0.000
Likelihood Ratio Chi-Square	2	64.737	0.000
Mantel-Haenszel Chi-Square	1	64.190	0.000
Phi Coefficient		0.060	
Contingency Coefficient		0.060	
Cramer's V		0.060	

Sample Size = 17870

APPENDIX H

SELECTION TO CAPE BY COHORT

TABLE OF YR BY CSEL

YR CSEL

Frequency Percent Row Pct Col Pct	0	1	Total
80	383 2.37 21.77 9.06	1089 8.53 78.23 11.55	1792 10.90
81	304 2.40 22.58 9.15	1049 8.21 77.42 11.13	1355 10.61
82	511 4.00 32.44 15.29	1064 8.33 67.56 11.28	1575 12.33
83	781 2.98 24.45 11.40	1177 9.22 75.55 12.48	1958 12.50
84	421 3.30 27.55 12.59	1107 8.67 72.45 11.74	1528 11.96
85	428 3.35 32.97 12.80	870 6.81 67.03 9.23	1298 10.16
86	373 2.92 28.69 11.16	927 7.26 71.31 9.83	1300 10.18
87	427 3.34 25.96 12.77	1219 9.54 74.04 12.92	1646 12.88
88	193 1.51 17.22 5.77	928 7.27 82.78 9.84	1121 8.78
Total	3343 26.17	9429 73.83	12772 100.00

STATISTICS FOR TABLE OF YR BY CSEL

Statistic	DF	Value	Prob
Chi-Square	8	140.875	0.000
Likelihood Ratio Chi-Square	8	143.028	0.000
Mantel-Haenszel Chi-Square	1	0.092	0.762
Phi Coefficient		0.105	
Contingency Coefficient		0.104	
Cramer's V		0.105	

Sample Size = 12772

SELECTION TO CAPT BY RACE_ETH

TABLE OF RACE_ETH BY CSEL

RACE_ETH	CSEL		
Frequency Percent Row Pct Col Pct	0	1	Total
BLACK	258 2.02 40.06 7.72	386 3.02 59.94 4.09	644 5.04
HISPANIC	87 0.68 30.96 2.60	194 1.52 69.04 2.06	281 2.20
OTHER	104 0.81 30.41 3.11	238 1.86 69.59 2.52	342 2.68
WHITE	2894 22.66 25.15 86.57	8611 67.42 74.85 91.32	11505 90.08
Total	3343 26.17	9429 73.83	12772 100.00

STATISTICS FOR TABLE OF RACE_ETH BY CSEL

Statistic	DF	Value	Prob
Chi-Square	3	76.980	0.000
Likelihood Ratio Chi-Square	3	71.289	0.000
Mantel-Haenszel Chi-Square	1	74.831	0.000
Phi Coefficient		0.078	
Contingency Coefficient		0.077	
Cramer's V		0.078	

Sample Size = 12772

SELECTION TO CAPT BY GENDER

TABLE OF GENDER BY CSEL

GENDER	CSEL		
Frequency Percent Row Pct Col Pct	0	1	Total
F	139 1.09 28.37 4.16	351 2.75 71.63 3.72	490 3.84
M	3204 25.09 26.09 95.84	9078 71.08 73.91 96.28	12282 96.16
Total	3343 26.17	9429 73.83	12772 100.00

STATISTICS FOR TABLE OF GENDER BY CSEL

Statistic	DF	Value	Prob
Chi-Square	1	1.268	0.260
Likelihood Ratio Chi-Square	1	1.247	0.264
Continuity Adj. Chi-Square	1	1.153	0.283
Mantel-Haenszel Chi-Square	1	1.268	0.260
Fisher's Exact Test (Left)			0.880
(Right)			0.142
(2-Tail)			0.271
Phi Coefficient		0.010	
Contingency Coefficient		0.010	
Cramer's V		0.010	

Sample Size = 12772

SELECTION TO CAPI BY SOURCE OF FINR/

TABLE OF SOURCE BY CSEL

SOURCE	CSEL		
Frequency / Percent / Row Pct / Col Pct	0	1	Total
XA	1424 11.15 29.29 42.60	3437 26.91 70.71 36.45	4861 38.06
XB	958 7.50 33.74 28.66	1881 14.73 66.26 19.95	2839 22.23
XC	173 1.35 12.15 5.17	1251 9.79 87.85 13.27	1424 11.15
XD	525 4.11 21.02 15.70	1973 15.45 78.98 20.92	2498 19.56
XE	189 1.47 23.33 5.62	618 4.84 76.67 6.55	806 6.31
XX	75 0.59 21.80 2.24	269 2.11 78.20 2.85	344 2.69
Total	3343 26.17	9429 73.83	12772 100.00

STATISTICS FOR TABLE OF SOURCE BY CSEL

Statistic	DF	Value	Prob
Chi-Square	5	294.819	0.000
Likelihood Ratio Chi-Square	5	316.305	0.000
Mantel-Haenszel Chi-Square	1	105.229	0.000
Phi Coefficient		0.152	
Contingency Coefficient		0.150	
Cramer's V		0.152	

Sample Size = 12772

SELECTION TO CAPT BY SOURCE OF ENTRY-LESS SVC ACAD

TABLE OF SOURCE BY CSEL

SOURCE Frequency Percent Row Pct Col Pct	CSEL 0	1	Total
XA	1424 12.55 29.29 44.92	3437 30.29 70.71 42.03	4861 42.84
XB	958 8.44 33.74 30.22	1881 16.58 66.26 23.00	2839 25.02
XD	525 4.63 21.02 16.56	1973 17.39 78.98 24.13	2498 22.01
XF	188 1.66 23.33 5.93	618 5.45 76.67 7.56	806 7.10
XX	75 0.66 21.80 2.37	269 2.37 78.20 3.29	344 3.03
Total	3170 27.93	8178 72.07	11348 100.00

STATISTICS FOR TABLE OF SOURCE BY CSEL

Statistic	DF	Value	Prob
Chi-Square	4	126.380	0.000
Likelihood Ratio Chi-Square	4	128.744	0.000
Mantel-Haenszel Chi-Square	1	51.497	0.000
Phi Coefficient		0.106	
Contingency Coefficient		0.105	
Cramer's V		0.106	

Sample Size = 11348

SELECTION TO CAPT BY GCT THRESHOLD = 120

TABLE OF GCTSUM BY CSEL

GCTSUM / CSEL	0	1	Total
Frequency / Percent / Row Pct / Col Pct			
<120	816	1567	2383
	6.39	12.27	18.66
	34.24	65.76	
	24.41	16.62	
>=120	2527	7862	10389
	19.79	61.56	81.34
	24.32	75.68	
	75.59	83.38	
Total	3343	9429	12772
	26.17	73.83	100.00

STATISTICS FOR TABLE OF GCTSUM BY CSEL

Statistic	DF	Value	Prob
Chi-Square	1	98.689	0.000
Likelihood Ratio Chi-Square	1	94.497	0.000
Continuity Adj. Chi-Square	1	98.176	0.000
Mantel-Haenszel Chi-Square	1	98.681	0.000
Fisher's Exact Test (Left)			1.000
(Right)			1.53E-22
(2-Tail)			2.52E-22
Phi Coefficient		0.088	
Contingency Coefficient		0.088	
Cramer's V		0.088	

Sample Size = 12772

SELECTION TO CAPI BY COMPOSITE THIRD

TABLE OF C_THIRD BY CSEL

C_THIRD	CSEL		
Frequency / Percent / Row Pct / Col Pct	0	1	Total
1	657 5.14 15.25 19.65	3652 28.59 84.75 38.73	4309 33.74
2	1069 8.37 24.91 31.98	3222 25.23 75.09 34.17	4291 33.60
3	1617 12.66 38.76 48.37	2555 20.00 61.24 27.10	4172 32.67
Total	3343 26.17	9429 73.83	12772 100.00

STATISTICS FOR TABLE OF C_THIRD BY CSEL

Statistic	DF	Value	Prob
Chi-Square	2	611.698	0.000
Likelihood Ratio Chi-Square	2	616.307	0.000
Mantel-Haenszel Chi-Square	1	605.209	0.000
Phi Coefficient		0.219	
Contingency Coefficient		0.214	
Cramer's V		0.219	

Sample Size = 12772

SELECTION TO CAPT BY "OCCFLD" AT IDS

TABLE OF OCCFLD BY CSEL

OCCFLD	CSEL		
Frequency / Percent / Row Pct / Col Pct	0	1	Total
AVIATOR	367 2.87 10.36 10.98	3174 24.85 89.64 33.66	3541 27.72
CBTARMS	1338 10.48 32.54 40.02	2774 21.72 67.46 29.42	4112 32.20
CBISPT	403 3.16 33.64 12.06	795 6.22 66.36 8.43	1198 9.38
CSVCSPT	1235 9.67 31.50 36.94	2686 21.03 68.50 28.49	3921 30.70
Total	3343 26.17	9429 73.83	12772 100.00

STATISTICS FOR TABLE OF OCCFLD BY CSEL

Statistic	DF	Value	Prob
Chi-Square	3	636.282	0.000
Likelihood Ratio Chi-Square	3	722.084	0.000
Mantel-Haenszel Chi-Square	1	326.086	0.000
Phi Coefficient		0.223	
Contingency Coefficient		0.218	
Cramer's V		0.223	

Sample Size = 12772

SELECTION TO CAPT BY "OCCFLD" AT TBS-LESS AVIATOR

TABLE OF OCCFLD BY CSEL

OCCFLD	CSEL		
Frequency Percent Row Pct Col Pct	0	1	Total
CBTARMS	1338 14.49 32.54 44.96	2774 30.05 67.46 44.35	4112 44.55
CBTSPT	403 4.37 33.64 13.54	795 8.61 66.36 12.71	1198 12.98
CSVCSPT	1235 13.38 31.50 41.50	2686 29.10 68.50 42.94	3921 42.48
Total	2976 32.24	6255 67.76	9231 100.00

STATISTICS FOR TABLE OF OCCFLD BY CSEL

Statistic	DF	Value	Prob
Chi-Square	2	2.233	0.327
Likelihood Ratio Chi-Square	2	2.229	0.328
Mantel-Haenszel Chi-Square	1	0.978	0.323
Phi Coefficient		0.016	
Contingency Coefficient		0.016	
Cramer's V		0.016	

Sample Size = 9231

SELECTION TO CAPT BY "OCCFLD" AT TIME CONSIDERED

TABLE OF COCCFLD BY CSEL

COCCFLD	CSEL		
Frequency Percent Row Pct Col Pct	0	1	Total
AVIATOR	103 0.81 4.74 3.08	2069 16.20 95.26 21.94	2172 17.01
CBTAMIS	1037 10.47 34.52 39.99	2536 19.86 65.48 26.90	3873 30.32
CBISPT	449 3.52 33.68 13.43	884 6.92 66.32 9.38	1333 10.44
CSVCSPT	1454 11.38 26.96 43.49	3940 30.85 73.04 41.79	5394 42.23
Total	3343 26.17	9429 73.83	12772 100.00

STATISTICS FOR TABLE OF COCCFLD BY CSEL

Statistic	DF	Value	Prob
Chi-Square	3	696.544	0.000
Likelihood Ratio Chi-Square	3	872.946	0.000
Mantel-Haenszel Chi-Square	1	126.112	0.000
Phi Coefficient		0.234	
Contingency Coefficient		0.227	
Cramer's V		0.234	

Sample Size = 12772

SELECTION TO CAPT BY "OCCFLD"-LESS AVIATOR, AT TIME CONSIDERED

TABLE OF COCCFLD BY CSEL

COCCFLD	CSEL		
Frequency Percent Row Pct Col Pct	0	1	Total
CBTAMIS	1337 12.61 34.52 41.27	2536 23.92 65.48 34.46	3873 36.54
CBTSPT	449 4.24 33.68 13.86	884 8.34 66.32 12.01	1333 12.58
CSVCSPT	1454 13.72 26.96 44.88	3940 37.17 73.04 53.53	5394 50.89
Total	3240 30.57	7360 69.43	10600 100.00

STATISTICS FOR TABLE OF COCCFLD BY CSEL

Statistic	DF	Value	Prob
Chi-Square	2	67.774	0.000
Likelihood Ratio Chi-Square	2	67.824	0.000
Mantel-Haenszel Chi-Square	1	63.022	0.000
Phi Coefficient		0.080	
Contingency Coefficient		0.080	
Cramer's V		0.080	

Sample Size = 10600

SELECTION TO CAPT BY AUS NONRESIDENT COMPLETION

TABLE OF CCLSNON BY CSEL

CCLSNON	CSEL		
Frequency Percent Row Pct Col Pct	0	1	Total
0	3218 25.20 26.53 96.26	8911 69.77 73.47 94.51	12129 94.97
1	125 0.98 19.44 3.74	518 4.06 80.56 5.49	643 5.03
Total	3343 26.17	9429 73.83	12772 100.00

STATISTICS FOR TABLE OF CCLSNON BY CSEL

Statistic	DF	Value	Prob
Chi-Square	1	15.891	0.000
Likelihood Ratio Chi-Square	1	16.875	0.000
Continuity Adj. Chi-Square	1	15.526	0.000
Mantel-Haenszel Chi-Square	1	15.890	0.000
Fisher's Exact Test (Left)			1.000
(Right)			2.54E-05
(2-Tail)			4.92E-05
Phi Coefficient		0.035	
Contingency Coefficient		0.035	
Cramer's V		0.035	

Sample Size = 12772

APPENDIX I

SELECTION TO MAJOR BY COHORT

TABLE OF YR BY MSEL

YR	MSEL		
Frequency Percent Row Pct Col Pct	0	1	Total
80	218 16.94 35.97 39.85	388 30.15 64.03 52.43	606 47.09
81	329 25.56 48.31 60.15	352 27.35 51.69 47.57	681 52.91
Total	547 42.50	740 57.50	1287 100.00

STATISTICS FOR TABLE OF YR BY MSEL

Statistic		DF	Value	Prob
Chi-Square		1	19.973	0.000
Likelihood Ratio Chi-Square		1	20.061	0.000
Continuity Adj. Chi-Square		1	19.472	0.000
Mantel-Haenszel Chi-Square		1	19.958	0.000
Fisher's Exact Test	(Left)			4.90E-06
	(Right)			1.000
	(2-Tail)			8.07E-06
Phi Coefficient			-0.125	
Contingency Coefficient			0.124	
Cramer's V			-0.125	

Sample Size = 1287

TABLE OF RACE_ETH BY MSEL

RACE_ETH	MSEL		
Frequency Percent Row Pct Col Pct	0	1	Total
BLACK	26 2.02 56.52 4.75	20 1.55 43.48 2.70	46 3.57
HISPANIC	4 0.31 50.00 0.73	4 0.31 50.00 0.54	8 0.62
OTHER	10 0.78 32.26 1.83	21 1.63 67.74 2.84	31 2.41
WHITE	507 39.39 42.18 92.69	695 54.00 57.82 93.92	1202 93.40
Total	547 42.50	740 57.50	1287 100.00

STATISTICS FOR TABLE OF RACE_ETH BY MSEL

Statistic	DF	Value	Prob
Chi-Square	3	5.266	0.153
Likelihood Ratio Chi-Square	3	5.248	0.155
Mantel-Haenszel Chi-Square	1	2.739	0.098
Phi Coefficient		0.064	
Contingency Coefficient		0.064	
Cramer's V		0.064	

Sample Size = 1287
WARNING: 25% of the cells have expected counts less than 5. Chi-Square may not be a valid test.

SELECTION TO MAJOR BY GENDER

TABLE OF GENDER BY MSEL

GENDER	MSEL		
Frequency Percent Row Pct Col Pct	0	1	Total
F	33 2.56 52.38 6.03	30 2.33 47.62 4.05	63 4.90
M	514 39.94 41.99 93.97	710 55.17 58.01 95.95	1224 95.10
Total	547 42.50	740 57.50	1287 100.00

STATISTICS FOR TABLE OF GENDER BY MSEL

Statistic	DF	Value	Prob
Chi-Square	1	2.645	0.104
Likelihood Ratio Chi-Square	1	2.612	0.106
Continuity Adj. Chi-Square	1	2.237	0.135
Mantel-Haenszel Chi-Square	1	2.643	0.104
Fisher's Exact Test (Left)			0.960
(Right)			0.068
(2-Tail)			0.117
Phi Coefficient		0.045	
Contingency Coefficient		0.045	
Cramer's V		0.045	

Sample Size = 1287

SELECTION TO MAJOR BY SOURCE OF ENTRY

TABLE OF SOURCE BY MSEL

SOURCE	MSEL		
Frequency Percent Row Pct Col Pct	0	1	Total
XA	164 12.74 40.69 29.98	239 18.57 59.31 32.30	403 31.31
XB	131 10.18 43.81 23.95	168 13.05 56.19 22.70	299 23.23
XC	44 3.42 33.33 8.04	88 6.84 66.67 11.89	132 10.26
XD	106 8.24 43.80 19.38	136 10.57 56.20 18.38	242 18.80
XE	57 4.43 45.97 10.42	67 5.21 54.03 9.05	124 9.63
XX	45 3.50 51.72 8.23	42 3.26 48.28 5.68	87 6.76
Total	547 42.50	740 57.50	1287 100.00

STATISTICS FOR TABLE OF SOURCE BY MSEL

Statistic	DF	Value	Prob
Chi-Square	5	9.094	0.105
Likelihood Ratio Chi-Square	5	9.168	0.103
Mantel-Haenszel Chi-Square	1	2.646	0.104
Phi Coefficient		0.084	
Contingency Coefficient		0.084	
Cramer's V		0.084	

Sample Size = 1287

SELECTION TO MAJ BY GCT THRESHOLD = 120

TABLE OF GCTSUM1 BY MSEL

GCTSUM1 MSEL.

Frequency Percent Row Pct Col Pct	0	1	Total
<120	101 7.85 50.25 18.46	100 7.77 49.75 13.51	201 15.62
>=120	446 34.65 41.07 81.54	640 49.73 58.93 86.49	1086 84.38
Total	547 42.50	740 57.50	1287 100.00

STATISTICS FOR TABLE OF GCTSUM1 BY MSEL

Statistic	DF	Value	Prob
Chi-Square	1	5.850	0.016
Likelihood Ratio Chi-Square	1	5.795	0.016
Continuity Adj. Chi-Square	1	5.480	0.019
Mantel-Haenszel Chi-Square	1	5.845	0.016
Fisher's Exact Test (Left)			0.994
(Right)			9.84E-03
(2-Tail)			0.016
Phi Coefficient		0.067	
Contingency Coefficient		0.067	
Cramer's V		0.067	

Sample Size = 1287

SELECTION TO MAJOR BY COMPOSITE THIRD

TABLE OF C_THIRD BY MSEL

C_THIRD	MSEL		
Frequency Percent Row Pct Col Pct	0	1	Total
1	177 13.75 32.36 32.36	370 28.75 67.64 50.00	547 42.50
2	193 15.00 45.95 35.28	227 17.64 54.05 30.68	420 32.63
3	177 13.75 55.31 32.36	143 11.11 44.69 19.32	320 24.86
Total	547 42.50	740 57.50	1287 100.00

STATISTICS FOR TABLE OF C_THIRD BY MSEL

Statistic	DF	Value	Prob
Chi-Square	2	46.566	0.000
Likelihood Ratio Chi-Square	2	46.908	0.000
Mantel-Haenszel Chi-Square	1	46.024	0.000
Phi Coefficient		0.190	
Contingency Coefficient		0.187	
Cramer's V		0.190	

Sample Size = 1287

SELECTION TO MAJOR BY "OCCFLD" AT IPS

TABLE OF OCCFLD BY MSEL

OCCFLD	MSEL		
Frequency / Percent / Row Pct / Col Pct	0	1	Total
AVIATOR	140 10.88 40.94 25.59	202 15.70 59.06 27.30	342 26.57
CBTARMS	221 17.17 43.59 40.40	286 22.22 56.41 38.65	507 39.39
CBTSPT	46 3.57 40.71 8.41	67 5.21 59.29 9.05	113 8.78
CSVCSPT	140 10.88 43.08 25.59	185 14.37 56.92 25.00	325 25.25
Total	547 42.50	740 57.50	1287 100.00

STATISTICS FOR TABLE OF OCCFLD BY MSEL

Statistic	DF	Value	Prob
Chi-Square	3	0.782	0.854
Likelihood Ratio Chi-Square	3	0.783	0.854
Mantel-Haenszel Chi-Square	1	0.126	0.722
Phi Coefficient		0.025	
Contingency Coefficient		0.025	
Cramer's V		0.025	

Sample Size = 1287

SELECTION TO MAJOR BY "OCCFLD" WHEN CAPTAIN

TABLE OF OCCFLD BY MSEL

OCCFLD	MSEL		
Frequency Percent Row Pct Col Pct	0	1	Total
AVIATOR	93 7.23 38.59 17.00	148 11.50 61.41 20.00	241 18.73
CBIAMS	215 16.71 43.88 39.31	275 21.37 56.12 37.16	490 38.07
CBISPT	50 3.89 40.32 9.14	74 5.75 59.68 10.00	124 9.63
CSVCSPT	189 14.69 43.75 34.55	243 18.88 56.25 32.84	432 33.57
Total	547 42.50	740 57.50	1287 100.00

STATISTICS FOR TABLE OF OCCFLD BY MSEL

Statistic	DF	Value	Prob
Chi-Square	3	2.406	0.493
Likelihood Ratio Chi-Square	3	2.419	0.490
Mantel-Haenszel Chi-Square	1	0.756	0.385
Phi Coefficient		0.043	
Contingency Coefficient		0.043	
Cramer's V		0.043	

Sample Size = 1287

SELECTION TO MAJOR BY "OCCFLD"AT TIME CONSIDERED

TABLE OF MOCCFLD BY MSEL

MOCCFLD	MSEL		
Frequency Percent Row Pct Col Pct	0	1	Total
AVIATOR	130 10.10 36.72 23.77	224 17.40 63.28 30.27	354 27.51
CBTAMS	174 13.52 44.85 31.81	214 16.63 55.15 28.92	388 30.15
CBTSPT	62 4.82 41.33 11.33	88 6.84 58.67 11.89	150 11.66
CSVCSPT	181 14.06 45.82 33.09	214 16.63 54.18 28.92	395 30.69
Total	547 42.50	740 57.50	1287 100.00

STATISTICS FOR TABLE OF MOCCFLD BY MSEL

Statistic	DF	Value	Prob
Chi-Square	3	7.576	0.056
Likelihood Ratio Chi-Square	3	7.631	0.054
Mantel-Haenszel Chi-Square	1	4.544	0.033
Phi Coefficient		0.077	
Contingency Coefficient		0.076	
Cramer's V		0.077	

Sample Size = 1287

SELECTION TO MAJOR BY AHS RESIDENT

TABLE OF HCLSRES BY HSEL

HCLSRES	HSEL		
Frequency Percent Row Pct Col Pct	0	1	Total
0	419 32.56 51.92 76.60	388 30.15 48.08 52.43	807 62.70
1	128 9.95 26.67 23.40	352 27.35 73.33 47.57	480 37.30
Total	547 42.50	740 57.50	1287 100.00

STATISTICS FOR TABLE OF HCLSRES BY HSEL

Statistic	DF	Value	Prob
Chi-Square	1	78.548	0.000
Likelihood Ratio Chi-Square	1	80.842	0.000
Continuity Adj. Chi-Square	1	77.518	0.000
Mantel-Haenszel Chi-Square	1	78.487	0.000
Fisher's Exact Test (Left)			1.000
(Right)			2.15E-19
(2-Tail)			2.94E-19
Phi Coefficient		0.247	
Contingency Coefficient		0.240	
Cramer's V		0.247	

Sample Size = 1287

SELECTION TO MAJOR BY CMD&STAFF NONRESIDENT

TABLE OF MILSHON BY MSEL

MILSHON	MSEL		
Frequency Percent Row Pct Col Pct	0	1	Total
0	499 38.77 45.32 91.22	602 46.78 54.68 81.35	1101 85.55
1	48 3.73 25.81 8.78	138 10.72 74.19 18.65	186 14.45
Total	547 42.50	740 57.50	1287 100.00

STATISTICS FOR TABLE OF MILSHON BY MSEL

Statistic	DF	Value	Prob
Chi-Square	1	24.799	0.000
Likelihood Ratio Chi-Square	1	26.028	0.000
Continuity Adj. Chi-Square	1	24.007	0.000
Mantel-Haenszel Chi-Square	1	24.780	0.000
Fisher's Exact Test (Left)			1.000
(Right)			2.69E-07
(2-Tail)			5.35E-07
Phi Coefficient		0.139	
Contingency Coefficient		0.137	
Cramer's V		0.139	

Sample Size = 1287

APPENDIX J

[illegible] TESTS OF RACE/ETHNIC BY RISK FACTOR

TABLE OF RACE_ETH BY YR

[illegible] YR

[illegible]	[illegible]	81	82	83	84	85	Total
[illegible]	57	65	45	94	106	85	910
	0.32	0.36	0.26	0.53	0.59	0.48	5.09
	6.26	7.14	7.14	10.33	11.65	9.34	
	3.85	3.95	3.93	5.40	6.35	6.21	
HISPANIC	8	8	18	42	41	30	457
	0.04	0.04	0.10	0.24	0.23	0.17	2.56
	1.75	1.75	3.94	9.19	8.97	6.56	
	0.54	0.55	1.09	2.41	2.46	2.10	
[illegible]	38	21	65	27	28	26	544
	0.21	0.12	0.36	0.15	0.21	0.15	3.09
	7.00	3.92	12.13	5.04	7.09	4.85	
	2.57	1.44	3.93	1.55	2.28	1.90	
[illegible]	1377	1366	1304	1377	1484	1288	15967
	7.71	7.64	8.42	8.82	8.39	6.87	89.35
	8.62	8.56	9.42	9.88	9.29	7.69	
	93.04	93.54	91.04	90.63	88.92	89.70	
Total	1480	1460	1452	1740	1669	1369	17870
	8.28	8.17	9.24	9.74	9.34	7.66	100.00

[illegible]

[illegible] YR

[illegible]	[illegible]	86	87	88	89	90	91	Total
BLACK	76	88	64	86	77	49	910
	0.41	0.49	0.36	0.48	0.43	0.27	5.09
	8.13	9.67	7.03	9.45	8.46	5.38	
	5.46	5.25	5.51	5.54	4.97	4.06	
HISPANIC	52	47	50	55	62	43	457
	0.29	0.26	0.28	0.31	0.35	0.24	2.56
	11.29	10.28	10.94	12.04	13.79	9.41	
	3.83	2.80	4.31	3.55	4.07	3.57	
OTHER	34	60	49	70	64	44	544
	0.19	0.34	0.27	0.39	0.36	0.25	3.00
	6.34	11.19	9.14	13.06	11.94	8.21	
	2.51	3.58	4.22	4.51	4.13	3.65	
WHITE	1196	1482	998	1340	1345	1070	15967
	6.69	8.29	5.58	7.50	7.53	5.99	89.35
	7.49	9.28	6.25	8.39	8.42	6.70	
	88.20	88.37	85.96	86.40	86.83	88.72	
Total	1356	1677	1161	1551	1549	1206	17870
	7.59	9.38	6.50	8.68	8.67	6.75	100.00

STATISTICS FOR TABLE OF RACE_ETH BY YR

Statistic	DF	Value	Prob
Chi-Square	33	209.473	0.000
Likelihood Ratio Chi-Square	33	232.221	0.000
Mantel-Haenszel Chi-Square	1	42.069	0.000
Phi Coefficient		0.108	
Contingency Coefficient		0.108	
Cramer's V		0.063	

Sample Size = 17870

CHI SQ TESTS OF RACE/ETHNIC BY RISK FACTOR

TABLE OF RACE_ETH BY SOURCE

RACE_ETH SOURCE

Frequency Percent Row Pct Col Pct	XA	XB	XC	XD	XE	XX	Total
BLACK	258	262	114	152	103	21	910
	1.44	1.47	0.64	0.85	0.58	0.12	5.09
	28.35	28.79	12.53	16.70	11.32	2.31	
	3.75	6.38	6.37	4.33	9.06	4.63	
HISPANIC	188	102	69	47	38	13	457
	1.05	0.57	0.39	0.26	0.21	0.07	2.56
	41.14	22.32	15.10	10.28	8.32	2.84	
	2.74	2.48	3.86	1.34	3.34	2.86	
OTHER	216	124	113	57	17	5	532
	1.21	0.69	0.63	0.32	0.10	0.03	2.98
	40.60	23.31	21.24	10.71	3.20	0.94	
	3.14	3.02	6.32	1.62	1.50	1.10	
WHITE	6211	3617	1493	3252	979	415	15967
	34.76	20.25	8.36	18.20	5.48	2.32	89.37
	38.90	22.65	9.35	20.37	6.13	2.60	
	90.37	88.11	83.45	92.70	86.10	91.41	
Total	6873	4105	1789	3508	1137	454	17866
	38.47	22.98	10.01	19.64	6.36	2.54	100.00

Frequency Missing = 4

STATISTICS FOR TABLE OF RACE_ETH BY SOURCE

Statistic	DF	Value	Prob
Chi-Square	15	235.984	0.000
Likelihood Ratio Chi-Square	15	224.573	0.000
Mantel-Haenszel Chi-Square	1	6.113	0.013
Phi Coefficient		0.115	
Contingency Coefficient		0.114	
Cramer's V		0.066	

Effective Sample Size = 17866
Frequency Missing = 4

CHI-SQUARE TESTS OF RACE/ETHNIC BY RISK FACTOR

TABLE OF RACE_ETH BY GCTSUM

RACE_ETH GCTSUM

Frequency Percent Row Pct Col Pct	<120	>=120	Total
BLACK	474 2.65 52.09 12.72	436 2.44 47.91 3.08	910 5.09
HISPANIC	162 0.91 35.45 4.35	295 1.65 64.55 2.09	457 2.56
OTHER	139 0.78 25.93 3.73	397 2.22 74.07 2.81	536 3.00
WHITE	2952 16.52 18.49 79.21	13015 72.83 81.51 92.02	15967 89.35
Total	3727 20.86	14143 79.14	17870 100.00

STATISTICS FOR TABLE OF RACE_ETH BY GCTSUM

Statistic	DF	Value	Prob
Chi-Square	3	659.319	0.000
Likelihood Ratio Chi-Square	3	545.432	0.000
Mantel-Haenszel Chi-Square	1	649.424	0.000
Phi Coefficient		0.192	
Contingency Coefficient		0.189	
Cramer's V		0.192	

Sample Size = 17870

CHI SQ TESTS OF RACE/ETHNIC BY RISK FACTOR

TABLE OF RACE_ETH BY C_THIRD

RACE_ETH C_THIRD

Frequency / Percent / Row Pct / Col Pct	1	2	3	Total
BLACK	76	183	651	910
	0.43	1.02	3.64	5.09
	8.35	20.11	71.54	
	1.28	3.06	10.93	
HISPANIC	92	136	229	457
	0.51	0.76	1.28	2.56
	20.13	29.76	50.11	
	1.55	2.27	3.85	
OTHER	150	175	211	536
	0.84	0.98	1.18	3.00
	27.99	32.65	39.37	
	2.53	2.93	3.54	
WHITE	5616	5487	4864	15967
	31.43	30.71	27.22	89.35
	35.17	34.36	30.46	
	94.64	91.74	81.68	
Total	5934	5981	5955	17870
	33.21	33.47	33.32	100.00

STATISTICS FOR TABLE OF RACE_ETH BY C_THIRD

Statistic	DF	Value	Prob
Chi-Square	6	752.665	0.000
Likelihood Ratio Chi-Square	6	733.929	0.000
Mantel-Haenszel Chi-Square	1	662.859	0.000
Phi Coefficient		0.205	
Contingency Coefficient		0.201	
Cramer's V		0.145	

Sample Size = 17870

APPENDIX K

[illegible] BY RACE_ETHNIC BY RISK FACTOR CAFE INCOME CODE

TABLE OF RACE_ETH BY YR

RACE_ETH	YR					
Frequency Percent Row Pct Col Pct	90	91	92	93	94	Total
[illegible]	71 0.56 7.32 5.46	85 0.67 8.76 6.54	61 0.48 9.47 3.87	82 0.64 12.73 5.26	91 0.71 14.13 5.96	390 3.06
HISPANIC	8 0.06 2.05 0.57	6 0.05 2.14 0.46	18 0.14 6.41 1.14	39 0.31 13.88 2.50	37 0.29 13.17 2.42	281 2.20
OTHER	37 0.29 10.82 2.64	20 0.16 5.85 1.48	64 0.50 18.71 4.06	22 0.17 6.43 1.41	39 0.31 11.4 2.23	342 2.68
WHITE	1296 10.15 11.26 92.10	1274 9.97 11.07 94.02	1432 11.21 12.45 90.92	1415 11.08 12.30 90.82	1746 13.70 11.97 89.40	11505 90.08
Total	1392 10.90	1355 10.61	1575 12.33	1558 12.20	1953 11.96	12772 100.00

(Continued)

RACE_ETH	YR				
Frequency Percent Row Pct Col Pct	95	96	97	98	Total
BLACK	82 0.64 12.73 6.32	72 0.56 11.18 5.54	88 0.69 13.66 5.35	62 0.49 9.63 5.53	644 5.04
HISPANIC	29 0.23 10.32 2.23	48 0.38 17.08 3.69	47 0.37 16.73 2.86	49 0.38 17.44 4.37	281 2.20
OTHER	23 0.18 6.73 1.77	34 0.27 9.94 2.62	60 0.47 17.54 3.65	48 0.38 14.04 4.28	342 2.68
WHITE	1164 9.11 10.12 89.68	1146 8.97 9.96 88.15	1450 11.35 12.60 88.15	962 7.53 8.36 85.82	11505 90.08
Total	1298 10.16	1300 10.18	1645 12.88	1121 8.78	12772 100.00

STATISTICS FOR TABLE OF RACE_ETH BY YR

Statistic	DF	Value	Prob
Chi-Square	24	162.775	0.000
Likelihood Ratio Chi-Square	24	173.742	0.000
Mantel-Haenszel Chi-Square	1	53.270	0.000
Phi Coefficient		0.113	
Contingency Coefficient		0.112	
Cramer's V		0.065	

Sample Size = 12772

CHI SQ TESTS OF RACE/ETHNIC BY RISK FACTOR-CAPT INZONE COHORT

TABLE OF RACE_ETH BY SOURCE

RACE_ETH SOURCE

Frequency / Percent / Row Pct / Col Pct	XA	XB	XC	XD	XE	XX	Total
BLACK	185	171	91	111	70	16	644
	1.45	1.34	0.71	0.87	0.55	0.13	5.04
	28.73	26.55	14.13	17.24	10.87	2.48	
	3.81	6.02	6.39	4.44	8.68	4.65	
HISPANIC	113	60	47	28	28	5	281
	0.88	0.47	0.37	0.22	0.22	0.04	2.20
	40.21	21.35	16.73	9.96	9.96	1.78	
	2.32	2.11	3.30	1.12	3.47	1.45	
OTHER	116	77	98	36	13	2	342
	0.91	0.60	0.77	0.28	0.10	0.02	2.68
	33.92	22.51	28.65	10.53	3.80	0.58	
	2.39	2.71	6.88	1.44	1.61	0.58	
WHITE	4447	2531	1188	2323	695	321	11505
	34.82	19.82	9.30	18.19	5.44	2.51	90.08
	38.65	22.00	10.33	20.19	6.04	2.79	
	91.48	89.15	83.43	92.99	86.23	93.31	
Total	4861	2839	1424	2498	806	344	12772
	38.06	22.23	11.15	19.56	6.31	2.69	100.00

STATISTICS FOR TABLE OF RACE_ETH BY SOURCE

Statistic	DF	Value	Prob
Chi-Square	15	207.989	0.000
Likelihood Ratio Chi-Square	15	183.650	0.000
Mantel-Haenszel Chi-Square	1	6.746	0.009
Phi Coefficient		0.128	
Contingency Coefficient		0.127	
Cramer's V		0.074	

Sample Size = 12772

CHI-SQ TESTS OF RACE/ETHNIC BY RISK FACTOR CAPT INZONE COHORT

TABLE OF RACE_ETH BY GCTSUM

RACE_ETH	GCTSUM		
Frequency / Percent / Row Pct / Col Pct	<120	>=120	Total
BLACK	320 2.51 49.69 13.43	324 2.54 50.31 3.12	644 5.04
HISPANIC	85 0.67 30.25 3.57	196 1.53 69.75 1.89	281 2.20
OTHER	76 0.60 22.22 3.19	266 2.08 77.78 2.56	342 2.68
WHITE	1902 14.89 16.53 79.82	9603 75.19 83.47 92.43	11505 90.08
Total	2383 18.66	10389 81.34	12772 100.00

STATISTICS FOR TABLE OF RACE_ETH BY GCTSUM

Statistic	DF	Value	Prob
Chi-Square	3	470.615	0.000
Likelihood Ratio Chi-Square	3	375.510	0.000
Mantel-Haenszel Chi-Square	1	455.114	0.000
Phi Coefficient		0.192	
Contingency Coefficient		0.189	
Cramer's V		0.192	

Sample Size = 12772

CHI SQ TESTS OF RACE/ETHNIC BY RISK FACTOR-CART INZONE COHORT

TABLE OF RACE_ETH BY C_THIRD

RACE_ETH	C_THIRD			
Frequency Percent Row Pct Col Pct	1	2	3	Total
BLACK	55 0.43 8.54 1.28	136 1.06 21.12 3.17	453 3.55 70.34 10.86	644 5.04
HISPANIC	59 0.46 21.00 1.37	77 0.60 27.40 1.79	145 1.14 51.60 3.48	281 2.20
OTHER	102 0.80 29.82 2.37	110 0.86 32.16 2.56	130 1.02 38.01 3.12	342 2.68
WHITE	4093 32.05 35.58 94.99	3968 31.07 34.49 92.47	3444 26.97 29.93 82.55	11505 90.08
Total	4309 33.74	4291 33.60	4172 32.67	12772 100.00

STATISTICS FOR TABLE OF RACE_ETH BY C_THIRD

Statistic	DF	Value	Prob
Chi-Square	6	523.740	0.000
Likelihood Ratio Chi-Square	6	508.498	0.000
Mantel-Haenszel Chi-Square	1	460.752	0.000
Phi Coefficient		0.203	
Contingency Coefficient		0.198	
Cramer's V		0.143	

Sample Size = 12772

CHI SQ TESTS OF RACE/ETHNIC BY RISK FACTOR-CAPT INZONE COHORT

TABLE OF RACE_ETH BY OCCFLD

RACE_ETH OCCFLD

Frequency Percent Row Pct Col Pct	AVIATOR	CBTAMIS	CBTSPT	CSVCSPT	Total
BLACK	76	185	70	313	644
	0.60	1.45	0.55	2.45	5.04
	11.80	28.73	10.87	48.60	
	2.15	4.50	5.84	7.98	
HISPANIC	71	81	39	90	281
	0.56	0.63	0.31	0.70	2.20
	25.27	28.83	13.88	32.03	
	2.01	1.97	3.26	2.30	
OTHER	85	119	32	106	342
	0.67	0.93	0.25	0.83	2.68
	24.85	34.80	9.36	30.99	
	2.40	2.89	2.67	2.70	
WHITE	3309	3727	1057	3412	11505
	25.91	29.18	8.28	26.71	90.08
	28.76	32.39	9.19	29.66	
	93.45	90.64	88.23	87.02	
Total	3541	4112	1198	3921	12772
	27.72	32.20	9.38	30.70	100.00

STATISTICS FOR TABLE OF RACE_ETH BY OCCFLD

Statistic	DF	Value	Prob
Chi-Square	9	148.769	0.000
Likelihood Ratio Chi-Square	9	154.211	0.000
Mantel-Haenszel Chi-Square	1	127.631	0.000
Phi Coefficient		0.108	
Contingency Coefficient		0.107	
Cramer's V		0.062	

Sample Size = 12772

CHI SQ TESTS OF RACE/ETHNIC BY RISK FACTOR-CAPI INZONE COHORT

TABLE OF RACE_ETH BY COCCFLD

RACE_ETH COCCFLD

Frequency Percent Row Pct Col Pct	AVIATOR	CBTARMS	CBTSPT	CSVCSPT	Total
BLACK	38	171	76	359	644
	0.30	1.34	0.60	2.81	5.04
	5.90	26.55	11.80	55.75	
	1.75	4.42	5.70	6.66	
HISPANIC	40	74	42	125	281
	0.31	0.58	0.33	0.98	2.20
	14.23	26.33	14.95	44.48	
	1.84	1.91	3.15	2.32	
OTHER	44	114	35	149	342
	0.34	0.89	0.27	1.17	2.68
	12.87	33.33	10.23	43.57	
	2.03	2.94	2.63	2.76	
WHITE	2050	3514	1180	4761	11505
	16.05	27.51	9.24	37.28	90.08
	17.82	30.54	10.26	41.38	
	94.38	90.73	88.52	88.26	
Total	2172	3873	1333	5394	12772
	17.01	30.32	10.44	42.23	100.00

STATISTICS FOR TABLE OF RACE_ETH BY COCCFLD

Statistic	DF	Value	Prob
Chi-Square	9	98.876	0.000
Likelihood Ratio Chi-Square	9	111.998	0.000
Mantel-Haenszel Chi-Square	1	80.623	0.000
Phi Coefficient		0.088	
Contingency Coefficient		0.088	
Cramer's V		0.051	

Sample Size = 12772

CHI SQ TESTS OF RACE/ETHNIC BY RISK FACTOR-CAPT INZONE COHORT

TABLE OF RACE_ETH BY CCLSNON

RACE_ETH / CCLSNON	0	1	Total
BLACK	603	41	644
	4.72	0.32	5.04
	93.63	6.37	
	4.97	6.38	
HISPANIC	263	18	281
	2.06	0.14	2.20
	93.59	6.41	
	2.17	2.80	
OTHER	327	15	342
	2.56	0.12	2.68
	95.61	4.39	
	2.70	2.33	
WHITE	10936	569	11505
	85.62	4.46	90.08
	95.05	4.95	
	90.16	88.49	
Total	12129	643	12772
	94.97	5.03	100.00

STATISTICS FOR TABLE OF RACE_ETH BY CCLSNON

Statistic	DF	Value	Prob
Chi-Square	3	3.986	0.263
Likelihood Ratio Chi-Square	3	3.739	0.291
Mantel-Haenszel Chi-Square	1	3.074	0.080
Phi Coefficient		0.018	
Contingency Coefficient		0.018	
Cramer's V		0.018	

Sample Size = 12772

APPENDIX L

CHI SQ TESTS OF RACE/ETHNIC BY RISK FACTOR-MAJ INZONE COHORT

TABLE OF RACE_ETH BY YR

RACE_ETH	YR		
Frequency Percent Row Pct Col Pct	80	81	Total
BLACK	18 1.40 39.13 2.97	28 2.18 60.87 4.11	46 3.57
HISPANIC	3 0.23 37.50 0.50	5 0.39 62.50 0.73	8 0.62
OTHER	19 1.48 61.29 3.14	12 0.93 38.71 1.76	31 2.41
WHITE	566 43.98 47.09 93.40	636 49.42 52.91 93.39	1202 93.40
Total	606 47.09	681 52.91	1287 100.00

STATISTICS FOR TABLE OF RACE_ETH BY YR

Statistic	DF	Value	Prob
Chi-Square	3	3.974	0.264
Likelihood Ratio Chi-Square	3	3.997	0.262
Mantel-Haenszel Chi-Square	1	0.586	0.444
Phi Coefficient		0.056	
Contingency Coefficient		0.055	
Cramer's V		0.056	

Sample Size = 1287
WARNING: 25% of the cells have expected counts less than 5. Chi-Square may not be a valid test.

CHI SQ TESTS OF RACE/ETHNIC BY RISK FACTOR-MAJ INZONE COHORT

TABLE OF RACE_ETH BY SOURCE

RACE_ETH SOURCE

Frequency / Percent / Row Pct / Col Pct	XA	XB	XC	XD	XE	XX	Total
BLACK	10	9	6	10	8	3	46
	0.78	0.70	0.47	0.78	0.62	0.23	3.57
	21.74	19.57	13.04	21.74	17.39	6.52	
	2.48	3.01	4.55	4.13	6.45	3.45	
HISPANIC	2	0	4	0	2	0	8
	0.16	0.00	0.31	0.00	0.16	0.00	0.62
	25.00	0.00	50.00	0.00	25.00	0.00	
	0.50	0.00	3.03	0.00	1.61	0.00	
OTHER	3	3	17	3	5	0	31
	0.23	0.23	1.32	0.23	0.39	0.00	2.41
	9.68	9.68	54.84	9.68	16.13	0.00	
	0.74	1.00	12.88	1.24	4.03	0.00	
WHITE	388	287	105	229	109	84	1202
	30.15	22.30	8.16	17.79	8.47	6.53	93.40
	32.28	23.88	8.74	19.05	9.07	6.99	
	96.28	95.99	79.55	94.63	87.90	96.55	
Total	403	299	132	242	124	87	1287
	31.31	23.23	10.26	18.80	9.63	6.76	100.00

STATISTICS FOR TABLE OF RACE_ETH BY SOURCE

Statistic	DF	Value	Prob
Chi-Square	15	99.138	0.000
Likelihood Ratio Chi-Square	15	70.047	0.000
Mantel-Haenszel Chi-Square	1	4.549	0.033
Phi Coefficient		0.278	
Contingency Coefficient		0.267	
Cramer's V		0.160	

Sample Size = 1287

WARNING: 50% of the cells have expected counts less than 5. Chi-Square may not be a valid test.

CHI SQ TESTS OF RACE/ETHNIC BY RISK FACTOR-MAJ INZONE COHORT

TABLE OF RACE_ETH BY GCTSUM

RACE_ETH	GCTSUM		
Frequency / Percent / Row Pct / Col Pct	<120	>=120	Total
BLACK	26 2.02 56.52 12.94	20 1.55 43.48 1.84	46 3.57
HISPANIC	1 0.08 12.50 0.50	7 0.54 87.50 0.64	8 0.62
OTHER	4 0.31 12.90 1.99	27 2.10 87.10 2.49	31 2.41
WHITE	170 13.21 14.14 84.58	1032 80.19 85.86 95.03	1202 93.40
Total	201 15.62	1086 84.38	1287 100.00

STATISTICS FOR TABLE OF RACE_ETH BY GCTSUM

Statistic	DF	Value	Prob
Chi-Square	3	60.617	0.000
Likelihood Ratio Chi-Square	3	42.641	0.000
Mantel-Haenszel Chi-Square	1	51.122	0.000
Phi Coefficient		0.217	
Contingency Coefficient		0.212	
Cramer's V		0.217	

Sample Size = 1287
WARNING: 25% of the cells have expected counts less than 5. Chi-Square may not be a valid test.

CHI SQ TESTS OF RACE/ETHNIC BY RISK FACTOR MAJ INZONE COHORT

TABLE OF RACE_ETH BY C_THIRD

RACE_ETH / Frequency / Percent / Row Pct / Col Pct	1	2	3	Total
BLACK	7	8	31	46
	0.54	0.62	2.41	3.57
	15.22	17.39	67.39	
	1.28	1.90	9.69	
HISPANIC	1	3	4	8
	0.08	0.23	0.31	0.62
	12.50	37.50	50.00	
	0.18	0.71	1.25	
OTHER	17	10	4	31
	1.32	0.78	0.31	2.41
	54.84	32.26	12.90	
	3.11	2.38	1.25	
WHITE	522	399	281	1202
	40.56	31.00	21.83	93.40
	43.43	33.19	23.38	
	95.43	95.00	87.81	
Total	547	420	320	1287
	42.50	32.63	24.86	100.00

STATISTICS FOR TABLE OF RACE_ETH BY C_THIRD

Statistic	DF	Value	Prob
Chi-Square	6	52.898	0.000
Likelihood Ratio Chi-Square	6	45.976	0.000
Mantel-Haenszel Chi-Square	1	32.909	0.000
Phi Coefficient		0.203	
Contingency Coefficient		0.199	
Cramer's V		0.143	

Sample Size = 1287
WARNING: 25% of the cells have expected counts less than 5. Chi-Square may not be a valid test.

CHI SQ TESTS OF RACE/ETHNIC BY RISK FACTOR HAJ INZONE COHORT

TABLE OF RACE_ETH BY OCCFLD

RACE_ETH	OCCFLD				
Frequency Percent Row Pct Col Pct	AVIATOR	CBTARMS	CBTSPT	CSVCSPT	Total
BLACK	5 0.39 10.87 1.46	14 1.09 30.43 2.76	6 0.47 13.04 5.31	21 1.63 45.65 6.46	46 3.57
HISPANIC	0 0.00 0.00 0.00	3 0.23 37.50 0.59	1 0.08 12.50 0.88	4 0.31 50.00 1.23	8 0.62
OTHER	7 0.54 22.58 2.05	15 1.17 48.39 2.96	2 0.16 6.45 1.77	7 0.54 22.58 2.15	31 2.41
WHITE	330 25.64 27.45 96.49	475 36.91 39.52 93.69	104 8.08 8.65 92.04	293 22.77 24.38 90.15	1202 93.40
Total	342 26.57	507 39.39	113 8.78	325 25.25	1287 100.00

STATISTICS FOR TABLE OF RACE_ETH BY OCCFLD

Statistic	DF	Value	Prob
Chi-Square	9	19.784	0.019
Likelihood Ratio Chi-Square	9	21.165	0.012
Mantel-Haenszel Chi-Square	1	16.095	0.000
Phi Coefficient		0.124	
Contingency Coefficient		0.123	
Cramer's V		0.072	

Sample Size = 1287
WARNING: 38% of the cells have expected counts less than 5. Chi-Square may not be a valid test.

CHI SQ TESTS OF RACE/ETHNIC BY RISK FACTOR-MAJ INZONE COHORT

TABLE OF RACE_ETH BY COCCFLD

RACE_ETH	COCCFLD				
Frequency / Percent / Row Pct / Col Pct	AVIATOR	CBTARMS	CBTSPT	CSVCSPT	Total
BLACK	1 0.08 2.17 0.41	12 0.93 26.09 2.45	7 0.54 15.22 5.65	26 2.02 56.52 6.02	46 3.57
HISPANIC	1 0.08 12.50 0.41	3 0.23 37.50 0.61	1 0.08 12.50 0.81	3 0.23 37.50 0.69	8 0.62
OTHER	4 0.31 12.90 1.66	16 1.24 51.61 3.27	2 0.16 6.45 1.61	9 0.70 29.03 2.08	31 2.41
WHITE	235 18.26 19.55 97.51	459 35.66 38.19 93.67	114 8.86 9.48 91.94	394 30.61 32.78 91.20	1202 93.40
Total	241 18.73	490 38.07	124 9.63	432 33.57	1287 100.00

STATISTICS FOR TABLE OF RACE_ETH BY COCCFLD

Statistic	DF	Value	Prob
Chi-Square	9	20.708	0.014
Likelihood Ratio Chi-Square	9	23.630	0.005
Mantel-Haenszel Chi-Square	1	15.405	0.000
Phi Coefficient		0.127	
Contingency Coefficient		0.126	
Cramer's V		0.073	

Sample Size = 1287

WARNING: 38% of the cells have expected counts less than 5. Chi-Square may not be a valid test.

CHI SQ TESTS OF RACE/ETHNIC BY RISK FACTOR HAD INZONE COHORT

TABLE OF RACE_ETH BY MCLSRES

RACE_ETH / MCLSRES	0	1	Total
BLACK	28	18	46
	2.18	1.40	3.57
	60.87	39.13	
	3.47	3.75	
HISPANIC	5	3	8
	0.39	0.23	0.62
	62.50	37.50	
	0.62	0.63	
OTHER	20	11	31
	1.55	0.85	2.41
	64.52	35.48	
	2.48	2.29	
WHITE	754	448	1202
	58.59	34.81	93.40
	62.73	37.27	
	93.43	93.33	
Total	807	480	1287
	62.70	37.30	100.00

STATISTICS FOR TABLE OF RACE_ETH BY MCLSRES

Statistic	DF	Value	Prob
Chi-Square	3	0.110	0.991
Likelihood Ratio Chi-Square	3	0.110	0.991
Mantel-Haenszel Chi-Square	1	0.038	0.845
Phi Coefficient		0.009	
Contingency Coefficient		0.009	
Cramer's V		0.009	

Sample Size = 1287

CHI SQ TESTS OF RACE/ETHNIC BY RISK FACTOR HAS THIZONE COHORT

TABLE OF RACE_ETH BY MOCCFLD

RACE_ETH Frequency Percent Row Pct Col Pct	MOCCFLD AVIATOR	CBTARMS	CBTSPT	CSVCSPT	Total
BLACK	2	10	8	26	46
	0.16	0.78	0.62	2.02	3.57
	4.35	21.74	17.39	56.52	
	0.56	2.58	5.33	6.58	
HISPANIC	1	3	1	3	8
	0.08	0.23	0.08	0.23	0.62
	12.50	37.50	12.50	37.50	
	0.28	0.77	0.67	0.76	
OTHER	8	12	6	5	31
	0.62	0.93	0.47	0.39	2.41
	25.81	38.71	19.35	16.13	
	2.26	3.09	4.00	1.27	
WHITE	343	363	135	361	1202
	26.65	28.21	10.49	28.05	93.40
	28.54	30.20	11.23	30.03	
	96.89	93.56	90.00	91.39	
Total	354	388	150	395	1287
	27.51	30.15	11.66	30.69	100.00

STATISTICS FOR TABLE OF RACE_ETH BY MOCCFLD

Statistic	DF	Value	Prob
Chi-Square	9	27.595	0.001
Likelihood Ratio Chi-Square	9	30.762	0.000
Mantel-Haenszel Chi-Square	1	18.931	0.000
Phi Coefficient		0.146	
Contingency Coefficient		0.145	
Cramer's V		0.085	

Sample Size = 1287
WARNING: 31% of the cells have expected counts less than 5. Chi-Square may not be a valid test.

CHI SQ TESTS OF RACE/ETHNIC BY RISK FACTOR-HAJ INZONE COHORT

TABLE OF RACE_ETH BY MILSNON

RACE_ETH	MILSNON		
Frequency Percent Row Pct Col Pct	0	1	Total
BLACK	38 2.95 82.61 3.45	8 0.62 17.39 4.30	46 3.57
HISPANIC	8 0.62 100.00 0.73	0 0.00 0.00 0.00	8 0.62
OTHER	26 2.02 83.87 2.36	5 0.39 16.13 2.69	31 2.41
WHITE	1029 79.95 85.61 93.46	173 13.44 14.39 93.01	1202 93.40
Total	1101 85.55	186 14.45	1287 100.00

STATISTICS FOR TABLE OF RACE_ETH BY MILSNON

Statistic	DF	Value	Prob
Chi-Square	3	1.747	0.627
Likelihood Ratio Chi-Square	3	2.874	0.411
Mantel-Haenszel Chi-Square	1	0.092	0.762
Phi Coefficient		0.037	
Contingency Coefficient		0.037	
Cramer's V		0.037	

Sample Size = 1287
WARNING: 25% of the cells have expected counts less than 5. Chi-Square may not be a valid test.

APPENDIX M

SELECTION TO CAPT BY RACE_ETH, MATCHED ON SOURCE=XA,XB

TABLE OF RACE_ETH BY CSEL

RACE_ETH	CSEL		
Frequency / Percent / Row Pct / Col Pct	0	1	Total
BLACK	168	188	356
	2.18	2.44	4.62
	47.19	52.81	
	7.05	3.54	
HISPANIC	67	106	173
	0.87	1.38	2.25
	38.73	61.27	
	2.81	1.99	
OTHER	73	120	193
	0.95	1.56	2.51
	37.82	62.18	
	3.06	2.26	
WHITE	2074	4904	6978
	26.94	63.69	90.62
	29.72	70.28	
	87.07	92.22	
Total	2382	5318	7700
	30.94	69.06	100.00

STATISTICS FOR TABLE OF RACE_ETH BY CSEL

Statistic	DF	Value	Prob
Chi-Square	3	58.043	0.000
Likelihood Ratio Chi-Square	3	54.693	0.000
Mantel-Haenszel Chi-Square	1	57.029	0.000
Phi Coefficient		0.087	
Contingency Coefficient		0.086	
Cramer's V		0.087	

Sample Size = 7700

SELECTION 10 CAPT BY RACE_ETH; MATCHED ON GCISUM <170

TABLE OF RACE_ETH BY CSEL

RACE_ETH	CSEL		
Frequency / Percent / Row Pct / Col Pct	0	1	Total
BLACK	142 5.96 44.38 17.40	178 7.47 55.63 11.36	320 13.43
HISPANIC	36 1.51 42.[illegible] 4.[illegible]	49 2.06 [illegible]65 13	85 3.57
OTHER	29 1.22 38.16 3.55	47 1.97 61.84 3.00	76 3.19
WHITE	609 25.56 32.02 74.63	1293 54.26 67.98 [illegible].51	1902 79.82
Total	816 34.24	1567 65.76	2383 100.00

STATISTICS FOR TABLE OF RACE_ETH BY CSEL

Statistic	DF	Value	Prob
Chi-Square	[illegible]	21.768	0.000
Likelihood Ratio Chi-Square	[illegible]	21.178	0.000
Mantel-Haenszel Chi-Square	1	21.495	0.000
Phi Coefficient		0.096	
Contingency Coefficient		0.095	
Cramer's V		0.096	

Sample Size = 2383

SELECTION TO CAPT BY RACE_ETH, MATCHED ON C_THIRD=3

TABLE OF RACE_ETH BY CSEL

RACE_ETH	CSEL		
Frequency / Percent / Row Pct / Col Pct	0	1	Total
BLACK	209 5.01 46.14 12.93	244 5.85 53.86 9.55	453 10.86
HISPANIC	62 1.49 42.76 3.83	83 1.99 57.24 3.25	145 3.48
OTHER	59 1.41 45.38 3.65	71 1.70 54.62 2.78	130 3.12
WHITE	1287 30.85 37.37 79.59	2157 51.70 62.63 84.42	3444 82.55
Total	1617 38.76	2555 61.24	4172 100.00

STATISTICS FOR TABLE OF RACE_ETH BY CSEL

Statistic	DF	Value	Prob
Chi-Square	3	16.572	0.001
Likelihood Ratio Chi-Square	3	16.335	0.001
Mantel-Haenszel Chi-Square	1	15.179	0.000
Phi Coefficient		0.063	
Contingency Coefficient		0.063	
Cramer's V		0.063	

Sample Size = 4172

CEL IO CAPTIHATCHED ON SOURCE=XA/B,GCTSUM<120,C_THIRD=3

TABLE OF RACE_ETH BY CSEL

RACE_ETH / CSEL	0	1	Total
BLACK	83	74	157
	8.69	7.75	16.44
	52.87	47.13	
	18.24	14.80	
HISPANIC	26	18	44
	2.72	1.88	4.61
	59.09	40.91	
	5.71	3.60	
OTHER	18	19	37
	1.88	1.99	3.87
	48.65	51.35	
	3.96	3.80	
WHITE	328	389	717
	34.35	40.73	75.08
	45.75	54.25	
	72.09	77.80	
Total	455	500	955
	47.64	52.36	100.00

STATISTICS FOR TABLE OF RACE_ETH BY CSEL

Statistic	DF	Value	Prob
Chi-Square	3	5.078	0.166
Likelihood Ratio Chi-Square	3	5.081	0.166
Mantel-Haenszel Chi-Square	1	3.921	0.048
Phi Coefficient		0.073	
Contingency Coefficient		0.073	
Cramer's V		0.073	

Sample Size = 955

APPENDIX N

SELECTION 10 CAPT BY RACE_ETH; MATCHED ON SOURCE=XC,XD,XE,XX

TABLE OF RACE_ETH BY CSEL

RACE_ETH	CSEL		
Frequency / Percent / Row Pct / Col Pct	0	1	Total
BLACK	90	198	288
	1.77	3.90	5.68
	31.25	68.75	
	9.37	4.82	
HISPANIC	20	88	108
	0.39	1.74	2.13
	18.52	81.48	
	2.08	2.14	
OTHER	31	118	149
	0.61	2.33	2.94
	20.81	79.19	
	3.23	2.87	
WHITE	820	3707	4527
	16.17	73.09	89.25
	18.11	81.89	
	85.33	90.17	
Total	961	4111	5072
	18.95	81.05	100.00

STATISTICS FOR TABLE OF RACE_ETH BY CSEL

Statistic	DF	Value	Prob
Chi-Square	3	30.782	0.000
Likelihood Ratio Chi-Square	3	27.287	0.000
Mantel-Haenszel Chi-Square	1	26.479	0.000
Phi Coefficient		0.078	
Contingency Coefficient		0.078	
Cramer's V		0.078	

Sample Size = 5072

SELECTION TO CAPT BY RACE_ETH; MATCHED ON GCISUM >=120

TABLE OF RACE_ETH BY CSEL

RACE_ETH	CSEL		
Frequency Percent Row Pct Col Pct	0	1	Total
BLACK	116 1.12 35.80 4.59	208 2.00 64.20 2.65	324 3.12
HISPANIC	51 0.49 26.02 2.02	145 1.40 73.98 1.84	196 1.89
OTHER	75 0.72 28.20 2.97	191 1.84 71.80 2.43	266 2.56
WHITE	2285 21.99 23.79 90.42	7318 70.44 76.21 93.08	9603 92.43
Total	2527 24.32	7862 75.68	10389 100.00

STATISTICS FOR TABLE OF RACE_ETH BY CSEL

Statistic	DF	Value	Prob
Chi-Square	3	27.125	0.000
Likelihood Ratio Chi-Square	3	25.115	0.000
Mantel-Haenszel Chi-Square	1	24.183	0.000
Phi Coefficient		0.051	
Contingency Coefficient		0.051	
Cramer's V		0.051	

Sample Size = 10389

SELECTION TO CAPT BY RACE_ETH; MATCHED ON C_THIRD=1,2

TABLE OF RACE_ETH BY CSEL

RACE_ETH	CSEL		
Frequency Percent Row Pct Col Pct	0	1	Total
BLACK	49 0.57 25.65 2.84	142 1.65 74.35 2.07	191 2.22
HISPANIC	25 0.29 18.38 1.45	111 1.29 81.62 1.61	136 1.58
OTHER	45 0.52 21.23 2.61	167 1.94 78.77 2.43	212 2.47
WHITE	1607 18.69 19.94 93.11	6454 75.05 80.06 93.89	8061 93.73
Total	1726 20.07	6874 79.93	8600 100.00

STATISTICS FOR TABLE OF RACE_ETH BY CSEL

Statistic	DF	Value	Prob
Chi-Square	3	4.222	0.238
Likelihood Ratio Chi-Square	3	4.001	0.261
Mantel-Haenszel Chi-Square	1	2.370	0.124
Phi Coefficient		0.022	
Contingency Coefficient		0.022	
Cramer's V		0.022	

Sample Size = 8600

CEL 10 CATCHMATCHED ON SOURCE=XC/D/E/X,GCTSUM>=120,C_THIRD=1/2

TABLE OF RACE_ETH BY CSEL

RACE_ETH	CSEL		
Frequency Percent Row Pct Col Pct	0	1	Total
BLACK	12 0.35 17.65 2.41	56 1.62 82.35 1.89	68 1.97
HISPANIC	6 0.17 10.71 1.21	50 1.45 89.29 1.69	56 1.62
OTHER	16 0.46 16.33 3.22	82 2.37 83.67 2.77	98 2.83
WHITE	463 13.38 14.30 93.16	2775 80.20 85.70 93.66	3238 93.58
Total	497 14.36	2963 85.64	3460 100.00

STATISTICS FOR TABLE OF RACE_ETH BY CSEL

Statistic	DF	Value	Prob
Chi-Square	3	1.520	0.678
Likelihood Ratio Chi-Square	3	1.525	0.677
Mantel-Haenszel Chi-Square	1	0.189	0.664
Phi Coefficient		0.021	
Contingency Coefficient		0.021	
Cramer's V		0.021	

Sample Size = 3460

APPENDIX O

SEL TO CAPT;MATCHED ON C_THIMD-1

TABLE OF RACE_ETH BY CSEL

RACE_ETH	CSEL		
Frequency Percent Row Pct Col Pct	0	1	Total
BLACK	10 0.23 18.18 1.52	45 1.04 81.82 1.23	55 1.28
HISPANIC	8 0.19 13.56 1.22	51 1.18 86.44 1.40	59 1.37
OTHER	17 0.39 16.67 2.59	85 1.97 83.33 2.33	102 2.37
WHITE	622 14.43 15.20 94.67	3471 80.55 84.80 95.04	4093 94.99
Total	657 15.25	3652 84.75	4309 100.00

STATISTICS FOR TABLE OF RACE_ETH BY CSEL

Statistic	DF	Value	Prob
Chi-Square	3	0.664	0.882
Likelihood Ratio Chi-Square	3	0.647	0.886
Mantel-Haenszel Chi-Square	1	0.179	0.672
Phi Coefficient		0.012	
Contingency Coefficient		0.012	
Cramer's V		0.012	

Sample Size = 4309

SEL 10 CAPT;MATCHED ON SOURCE=XC,XD

TABLE OF RACE_ETH BY CSEL

RACE_ETH	CSEL		
Frequency / Percent / Row Pct / Col Pct	0	1	Total
BLACK	61	141	202
	1.56	3.60	5.15
	30.20	69.80	
	8.74	4.37	
HISPANIC	14	61	75
	0.36	1.56	1.91
	18.67	81.33	
	2.01	1.89	
OTHER	27	107	134
	0.69	2.73	3.42
	20.15	79.85	
	3.87	3.32	
WHITE	596	2915	3511
	15.20	74.32	89.58
	16.98	83.02	
	85.39	90.42	
Total	698	3224	3922
	17.80	82.20	100.00

STATISTICS FOR TABLE OF RACE_ETH BY CSEL

Statistic	DF	Value	Prob
Chi-Square	3	23.400	0.000
Likelihood Ratio Chi-Square	3	20.561	0.000
Mantel-Haenszel Chi-Square	1	21.125	0.000
Phi Coefficient		0.077	
Contingency Coefficient		0.077	
Cramer's V		0.077	

Sample Size = 3922

CSEL 10 CAPTURE MATCHED ON 137<GCT<=140

TABLE OF RACE_ETH BY CSEL

RACE_ETH	CSEL		
Frequency / Percent / Row Pct / Col Pct	0	1	Total
BLACK	3 0.11 17.65 0.55	14 0.53 82.35 0.67	17 0.65
HISPANIC	5 0.19 15.15 0.92	28 1.07 84.85 1.35	33 1.26
OTHER	16 0.61 24.62 2.94	49 1.87 75.38 2.36	65 2.48
WHITE	521 19.89 20.80 95.60	1984 75.73 79.20 95.61	2505 95.61
Total	545 20.80	2075 79.20	2620 100.00

STATISTICS FOR TABLE OF RACE_ETH BY CSEL

Statistic	DF	Value	Prob
Chi-Square	3	1.316	0.725
Likelihood Ratio Chi-Square	3	1.347	0.718
Mantel-Haenszel Chi-Square	1	0.147	0.701
Phi Coefficient		0.022	
Contingency Coefficient		0.022	
Cramer's V		0.022	

Sample Size = 2620

CSEL TO CAPT:MATCHED ON C_THIND=1,SOURCE=XC,XD,137<GCI<=160

TABLE OF RACE_ETH BY CSEL

RACE_ETH	CSEL		
Frequency Percent Row Pct Col Pct	0	1	Total
BLACK	0 0.00 0.00 0.00	2 0.29 100.00 0.32	2 0.29
HISPANIC	0 0.00 0.00 0.00	4 0.57 100.00 0.65	4 0.57
OTHER	3 0.43 12.50 3.80	21 3.01 87.50 3.39	24 3.44
WHITE	76 10.89 11.38 96.20	592 84.81 88.62 95.64	668 95.70
Total	79 11.32	619 88.68	698 100.00

STATISTICS FOR TABLE OF RACE_ETH BY CSEL

Statistic	DF	Value	Prob
Chi-Square	3	0.801	0.849
Likelihood Ratio Chi-Square	3	1.476	0.688
Mantel-Haenszel Chi-Square	1	0.301	0.583
Phi Coefficient		0.034	
Contingency Coefficient		0.034	
Cramer's V		0.034	

Sample Size = 698
WARNING: 63% of the cells have expected counts less than 5. Chi-Square may not be a valid test.

CSEL TO CAPT;MATCHED ON C_THIRD=2

TABLE OF RACE_ETH BY CSEL

RACE_ETH	CSEL		
Frequency / Percent / Row Pct / Col Pct	0	1	Total
BLACK	39	97	136
	0.91	2.26	3.17
	28.68	71.32	
	3.65	3.01	
HISPANIC	17	60	77
	0.40	1.40	1.79
	22.08	77.92	
	1.59	1.86	
OTHER	28	82	110
	0.65	1.91	2.56
	25.45	74.55	
	2.62	2.55	
WHITE	985	2983	3968
	22.96	69.52	92.47
	24.82	75.18	
	92.14	92.58	
Total	1069	3222	4291
	24.91	75.09	100.00

STATISTICS FOR TABLE OF RACE_ETH BY CSEL

Statistic	DF	Value	Prob
Chi-Square	3	1.395	0.707
Likelihood Ratio Chi-Square	3	1.372	0.712
Mantel-Haenszel Chi-Square	1	0.467	0.494
Phi Coefficient		0.018	
Contingency Coefficient		0.018	
Cramer's V		0.018	

Sample Size = 4291

SEL IO CAPTMATCHED ON SOURCE=XE,XX

TABLE OF RACE_ETH BY CSEL

RACE_ETH / Frequency / Percent / Row Pct / Col Pct	0	1	Total
BLACK	29	57	86
	2.52	4.96	7.48
	33.72	66.28	
	11.03	6.43	
HISPANIC	6	27	33
	0.52	2.35	2.87
	18.18	81.82	
	2.28	3.04	
OTHER	4	11	15
	0.35	0.96	1.30
	26.67	73.33	
	1.52	1.24	
WHITE	224	792	1016
	19.48	68.87	88.35
	22.05	77.95	
	85.17	89.29	
Total	263	887	1150
	22.87	77.13	100.00

STATISTICS FOR TABLE OF RACE_ETH BY CSEL

Statistic	DF	Value	Prob
Chi-Square	3	6.664	0.083
Likelihood Ratio Chi-Square	3	6.182	0.103
Mantel-Haenszel Chi-Square	1	4.476	0.034
Phi Coefficient		0.076	
Contingency Coefficient		0.076	
Cramer's V		0.076	

Sample Size = 1150

SEL 10 CATEGORICAL ON 107<GCT<=137

TABLE OF RACE_ETH BY CSEL

RACE_ETH	CSEL		
Frequency / Percent / Row Pct / Col Pct	0	1	Total
BLACK	219 2.29 40.63 8.46	320 3.35 59.37 4.60	539 5.65
HISPANIC	72 0.75 31.30 2.78	158 1.66 68.70 2.27	230 2.41
OTHER	81 0.85 31.15 3.13	179 1.88 68.85 2.57	260 2.72
WHITE	2217 23.23 26.04 85.63	6298 65.99 73.96 90.55	8515 89.22
Total	2589 27.13	6955 72.87	9544 100.00

STATISTICS FOR TABLE OF RACE_ETH BY CSEL

Statistic	DF	Value	Prob
Chi-Square	3	59.006	0.000
Likelihood Ratio Chi-Square	3	54.997	0.000
Mantel-Haenszel Chi-Square	1	57.009	0.000
Phi Coefficient		0.079	
Contingency Coefficient		0.078	
Cramer's V		0.079	

Sample Size = 9544

SEL TO CAPTURMATCHED ON C_THIRD=2,SOURCE=XE,XX,107<GCT<=137

TABLE OF RACE_ETH BY CSEL

RACE_ETH / CSEL	0	1	Total
BLACK	6	15	21
	2.63	6.58	9.21
	28.57	71.43	
	10.71	8.72	
HISPANIC	2	5	7
	0.88	2.19	3.07
	28.57	71.43	
	3.57	2.91	
OTHER	0	4	4
	0.00	1.75	1.75
	0.00	100.00	
	0.00	2.33	
WHITE	48	148	196
	21.05	64.91	85.96
	24.49	75.51	
	85.71	86.05	
Total	56	172	228
	24.56	75.44	100.00

STATISTICS FOR TABLE OF RACE_ETH BY CSEL

Statistic	DF	Value	Prob
Chi-Square	3	1.546	0.672
Likelihood Ratio Chi-Square	3	2.490	0.477
Mantel-Haenszel Chi-Square	1	0.124	0.725
Phi Coefficient		0.082	
Contingency Coefficient		0.082	
Cramer's V		0.082	

Sample Size = 228
WARNING: 38% of the cells have expected counts less than 5. Chi-Square may not be a valid test.

SEL TO CASES;MATCHED ON C_THIRD=3

TABLE OF RACE_ETH BY CSEL

RACE_ETH	CSEL		
Frequency Percent Row Pct Col Pct	0	1	Total
BLACK	209 5.01 46.14 12.93	244 5.85 53.86 9.55	453 10.86
HISPANIC	62 1.49 42.76 3.83	83 1.99 57.24 3.25	145 3.48
OTHER	59 1.41 45.38 3.65	71 1.70 54.62 2.78	130 3.12
WHITE	1287 30.85 37.37 79.59	2157 51.70 62.63 84.42	3444 82.55
Total	1617 38.76	2555 61.24	4172 100.00

STATISTICS FOR TABLE OF RACE_ETH BY CSEL

Statistic	DF	Value	Prob
Chi-Square	3	16.572	0.001
Likelihood Ratio Chi-Square	3	16.335	0.001
Mantel-Haenszel Chi-Square	1	15.179	0.000
Phi Coefficient		0.063	
Contingency Coefficient		0.063	
Cramer's V		0.063	

Sample Size = 4172

SEL 10 CAPTURMATCHED ON SOURCE=XA,XB

TABLE OF RACE_ETH BY CSEL

RACE_ETH / CSEL	0	1	Total
BLACK	168	188	356
	2.18	2.44	4.62
	47.19	52.81	
	7.05	3.54	
HISPANIC	67	106	173
	0.87	1.38	2.25
	38.73	61.27	
	2.81	1.99	
OTHER	73	120	193
	0.95	1.56	2.51
	37.82	62.18	
	3.06	2.26	
WHITE	2074	4904	6978
	26.94	63.69	90.62
	29.72	70.28	
	87.07	92.22	
Total	2382	5318	7700
	30.94	69.06	100.00

STATISTICS FOR TABLE OF RACE_ETH BY CSEL

Statistic	DF	Value	Prob
Chi-Square	3	58.043	0.000
Likelihood Ratio Chi-Square	3	54.693	0.000
Mantel-Haenszel Chi-Square	1	57.029	0.000
Phi Coefficient		0.087	
Contingency Coefficient		0.086	
Cramer's V		0.087	

Sample Size = 7700

SEL TO CAPT MATCHED ON 81<=GCT<=107

TABLE OF RACE_ETH BY CSEL

RACE_ETH	CSEL		
Frequency Percent Row Pct Col Pct	0	1	Total
BLACK	26 14.44 42.62 32.91	35 19.44 57.38 34.65	61 33.89
HISPANIC	6 3.33 75.00 7.59	2 1.11 25.00 1.98	8 4.44
OTHER	1 0.56 50.00 1.27	1 0.56 50.00 0.99	2 1.11
WHITE	46 25.56 42.20 58.23	63 35.00 57.80 62.38	109 60.56
Total	79 43.89	101 56.11	180 100.00

STATISTICS FOR TABLE OF RACE_ETH BY CSEL

Statistic	DF	Value	Prob
Chi-Square	3	3.340	0.342
Likelihood Ratio Chi-Square	3	3.392	0.335
Mantel-Haenszel Chi-Square	1	0.087	0.768
Phi Coefficient		0.136	
Contingency Coefficient		0.135	
Cramer's V		0.136	

Sample Size = 180
WARNING: 50% of the cells have expected counts less than 5. Chi-Square may not be a valid test.

CEL 10 CAPTURED ON C_THIRD=3,SOURCE=XA,XB,81<=GCT<=107

TABLE OF RACE_ETH BY CSEL

RACE_ETH	CSEL		
Frequency Percent Row Pct Col Pct	0	1	Total
BLACK	14 15.05 46.67 29.17	16 17.20 53.33 35.56	30 32.26
HISPANIC	5 5.38 100.00 10.42	0 0.00 0.00 0.00	5 5.38
OTHER	1 1.08 100.00 2.08	0 0.00 0.00 0.00	1 1.08
WHITE	28 30.11 49.12 58.33	29 31.18 50.88 64.44	57 61.29
Total	48 51.61	45 48.39	93 100.00

STATISTICS FOR TABLE OF RACE_ETH BY CSEL

Statistic	DF	Value	Prob
Chi-Square	3	6.060	0.109
Likelihood Ratio Chi-Square	3	8.372	0.039
Mantel-Haenszel Chi-Square	1	0.017	0.898
Phi Coefficient		0.255	
Contingency Coefficient		0.247	
Cramer's V		0.255	

Sample Size = 93
WARNING: 50% of the cells have expected counts less than 5. Chi-Square may not be a valid test.

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